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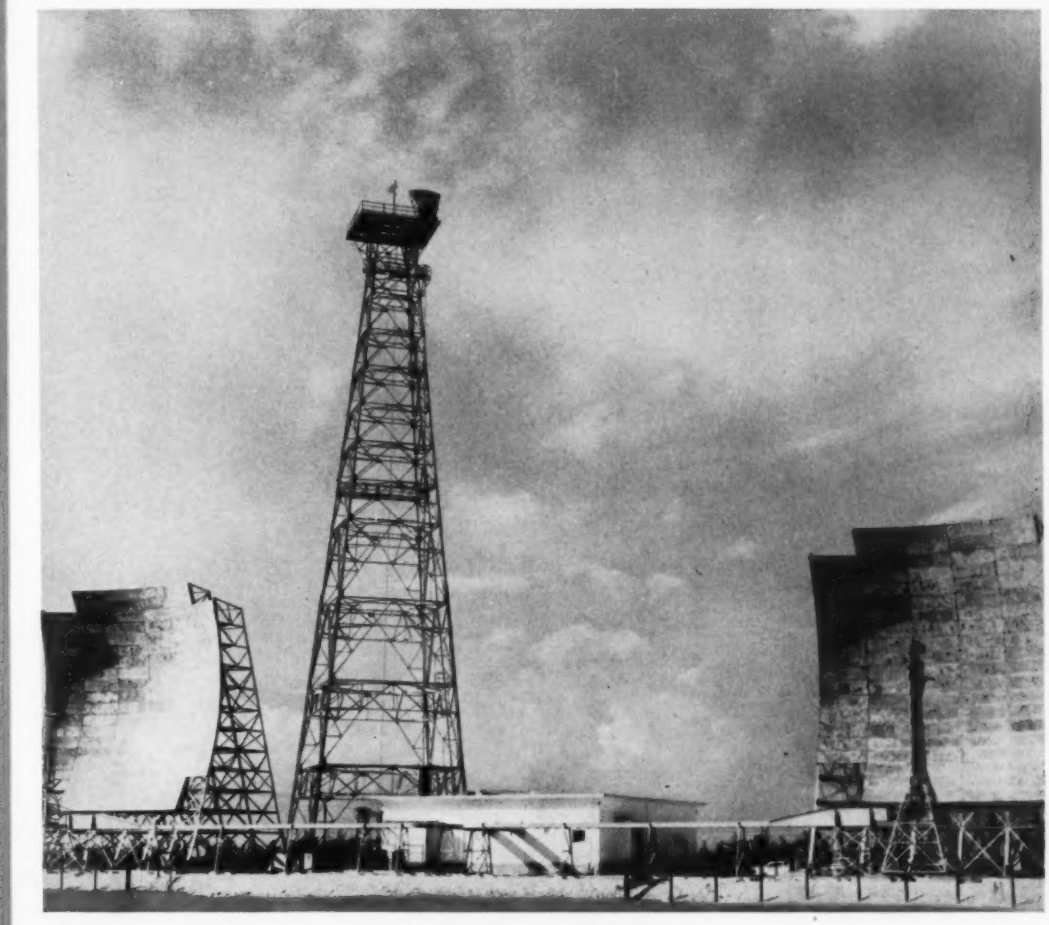
Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



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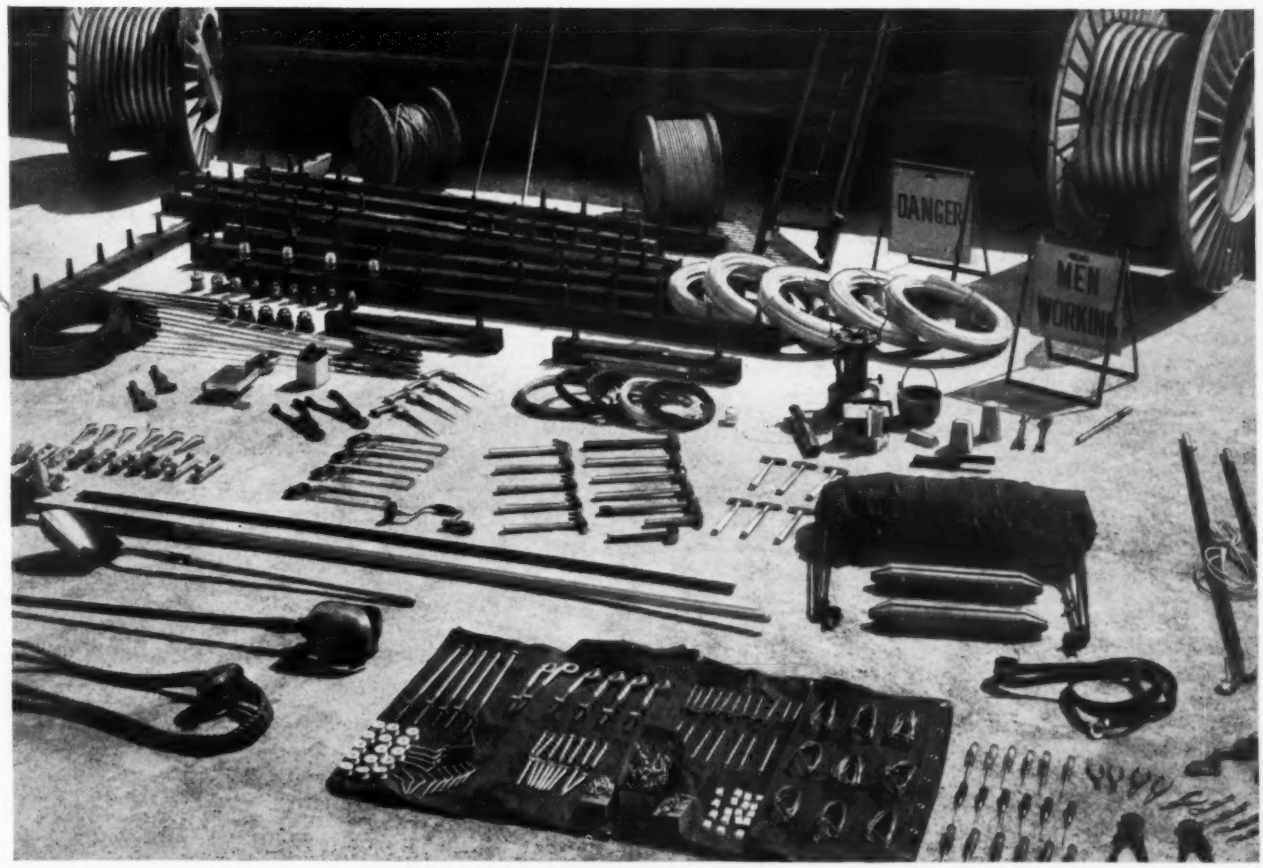

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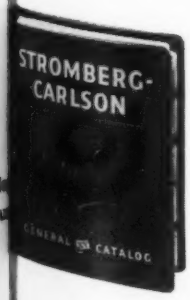

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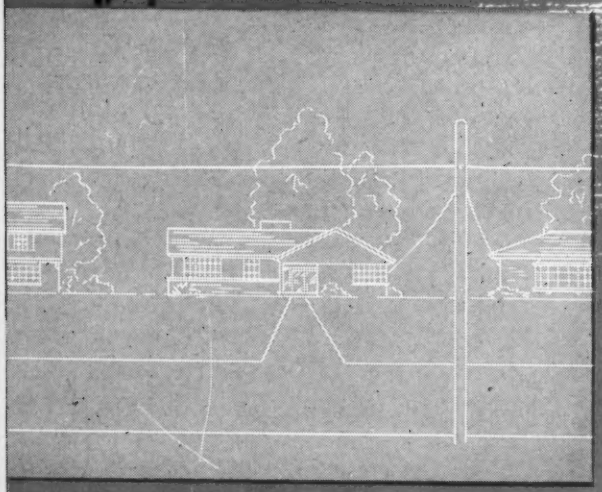

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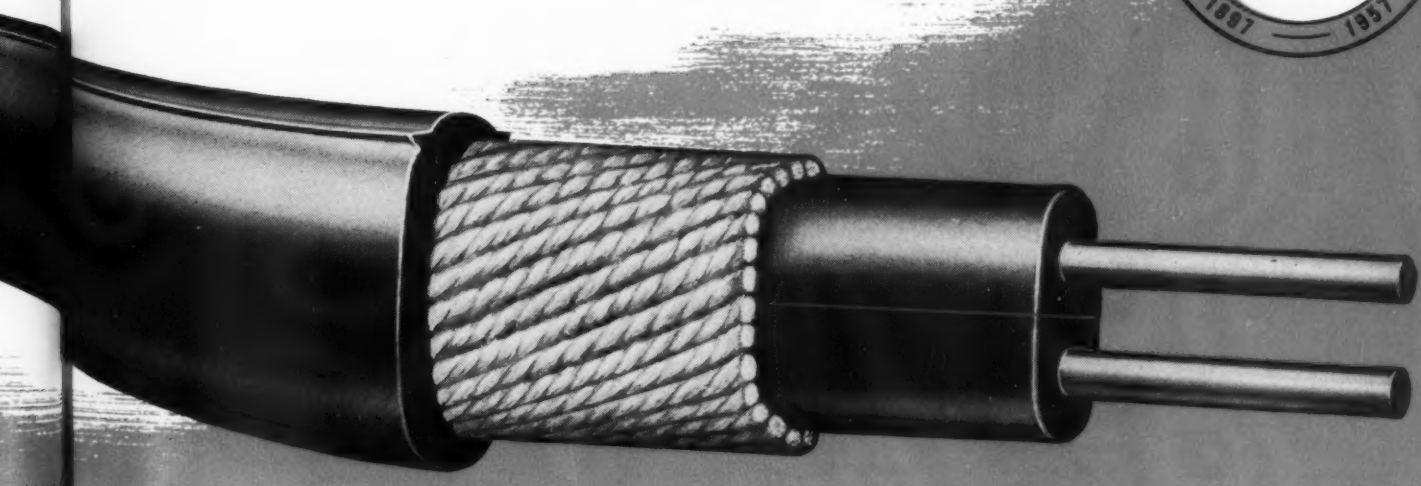

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FLASHES AND PLUGS

PRICE OF FAME—SECONDHAND. Getting rock 'n' roll singer Elvis Presley on the telephone at his home in Memphis, Tenn., is just about equivalent to climbing Mount Everest—his number is unlisted and only two or three friends are let in on the secret.

But while Elvis is at peace in his newly acquired southern style mansion, reports the United Press, 31 other Presley families are finding themselves harassed daily.

The calls are mostly from teen agers, but older folks try to get in touch with the singer too.

"Being the first Presley in the telephone book, I get a large share of the calls," says one harassed subscriber.

"Even when the caller is convinced Elvis doesn't live here, the party insists 'you are probably a cousin and know where I can locate him,' " Mrs. Presley said. She has even gotten collect long distance calls from Texas, Florida and California.

Many insist, "Aw, c'mon, we know Elvis is there," she said.

Another more optimistic Presley reports the number of calls aren't what they used to be.

"They would ring my number at least once a night," he said, "and would often wake me up at 2 or 3 a.m. I can always tell when Elvis is in Memphis because the calls start coming in again."

A second Mrs. Presley thinks Elvis "ought to put up with what we other Presleys have to put up with.

"It isn't so bad when the callers are nice or don't call in the early morning hours," she said.

"I don't have anything against the boy, but I do wish there were some way for his callers to call him and not me."

•

THE LADY HAZEL. A Little Theatre in New Jersey, Camden County Music Circus, is thinking of asking for a different telephone exchange, reports the Associated Press. The current exchange happened to be HAzel, the name of one of those high-powered hurricanes we had some time ago, but whether the name was the jinx or no, high winds ripped the summer theatre tent to shreds recently.

•

ON THE RIGHT TRACK? Mother: "Daughter, before you become serious with that boy friend of yours, be sure that he is kind and considerate."

Daughter: "Oh, I'm sure of that, Mother. Why only the other day he told me he had put his shirt on a horse that was scratched."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

September 7, 1957

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ACME VISIBLE

UNDER-GLASS BULLETIN HOLDER

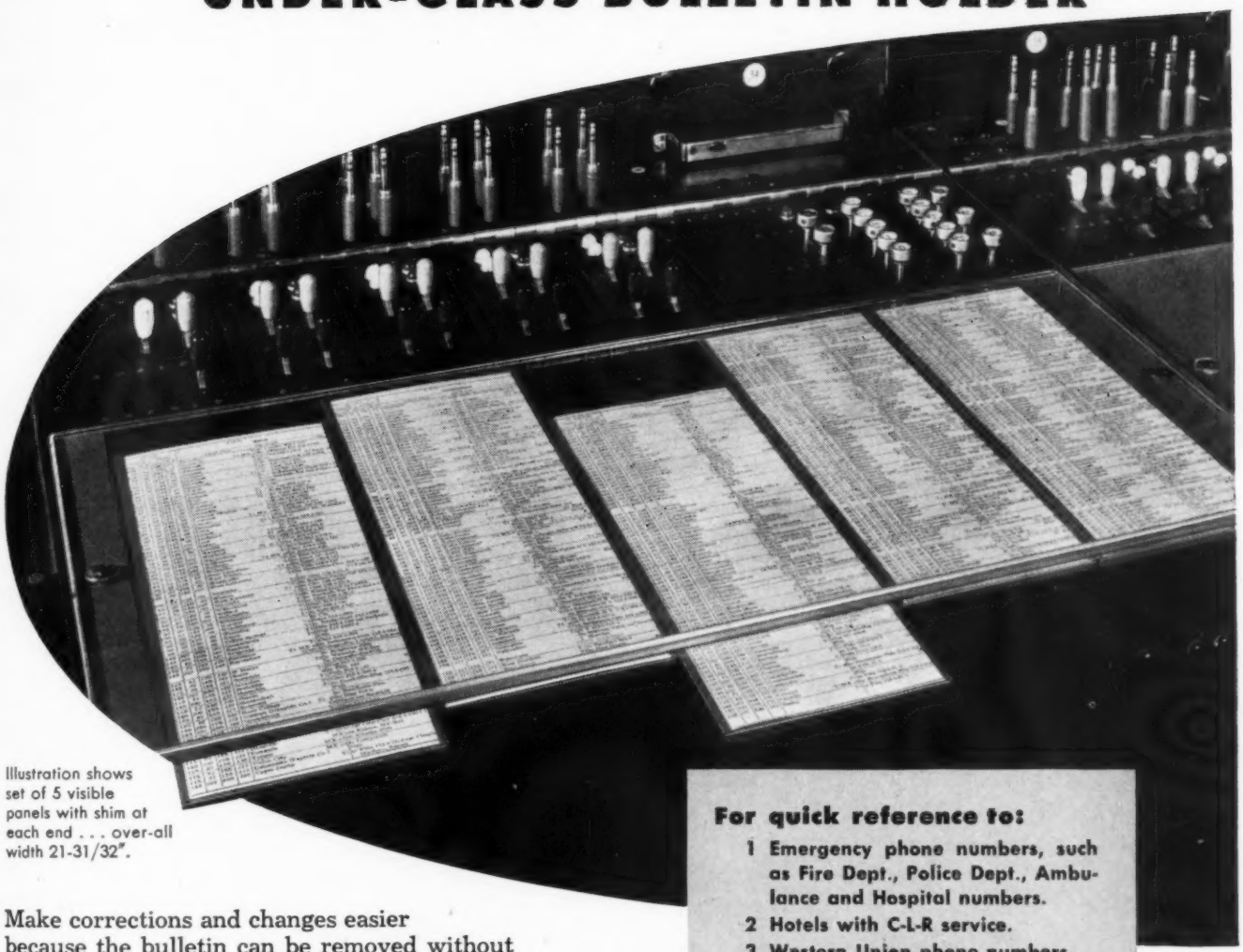

Illustration shows set of 5 visible panels with shim at each end . . . over-all width 21-31/32".

Make corrections and changes easier because the bulletin can be removed without loosening the glass. Being divided into a number of panels only the panel (page) to be corrected need be removed. One piece steel construction, flanged at back and side edges to hold the bulletin in place. The front edge is formed to provide a "pull" to slide panel out. A shim at each end panel makes the over-all width the same as the Bulletin Glass space. Shims are slightly thicker than panels and have a slot through which the Plexiglass screws hold the glass firmly, and permit sliding the individual panels in and out. Made to meet dimensional requirements both as to individual panels and over-all size of boards.

For quick reference to:

1. **Emergency phone numbers, such as Fire Dept., Police Dept., Ambulance and Hospital numbers.**
2. **Hotels with C-L-R service.**
3. **Western Union phone numbers.**
4. **Telephone numbers of local companies receiving frequent long distance calls.**
5. **Frequently called direct circuit points and tributaries.**
6. **DSA Toll points.**

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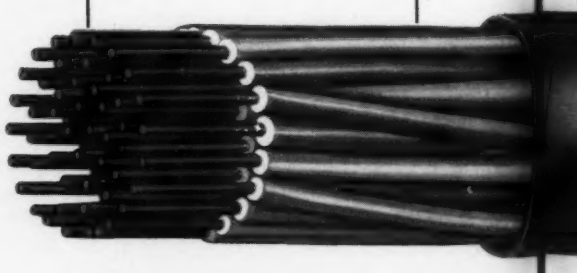

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- Unique "lay pattern" that virtually engineers cross talk right out of the cable.
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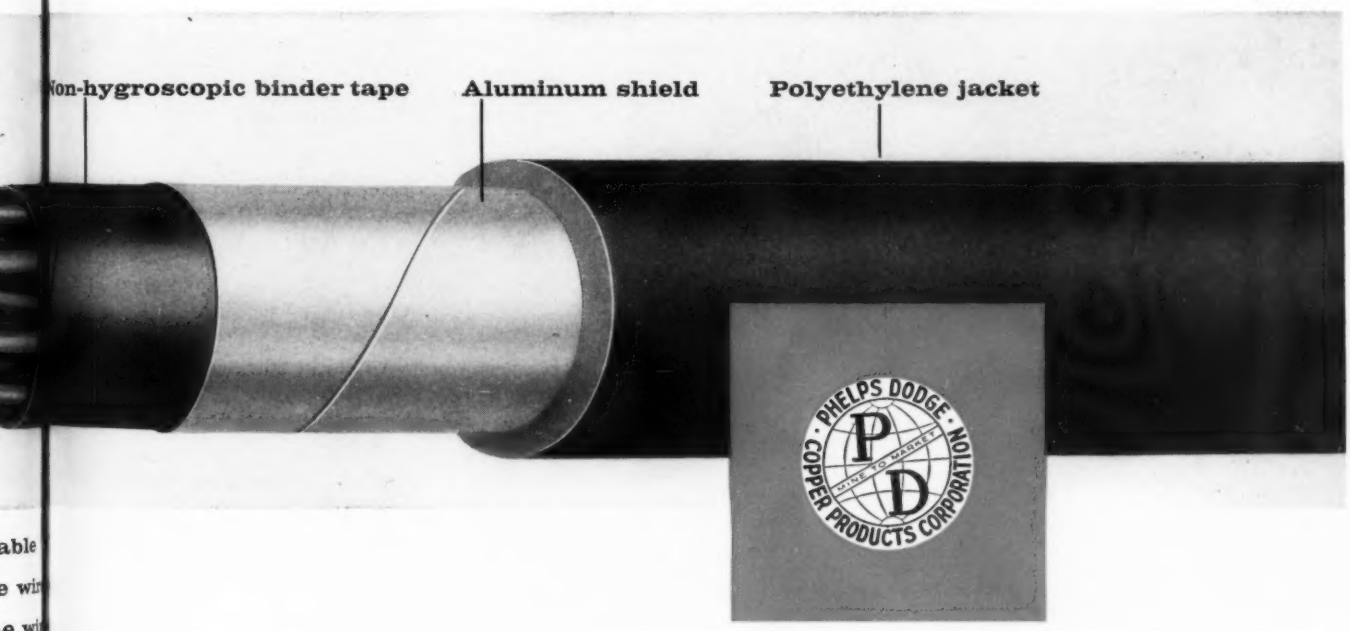
- Special non-hygroscopic binder tape of laminated rubber and Mylar* that provides superior dielectric strength between core and shield, extra mechanical protection to the cabled assembly.

**Mylar—Du Pont's polyester film.*



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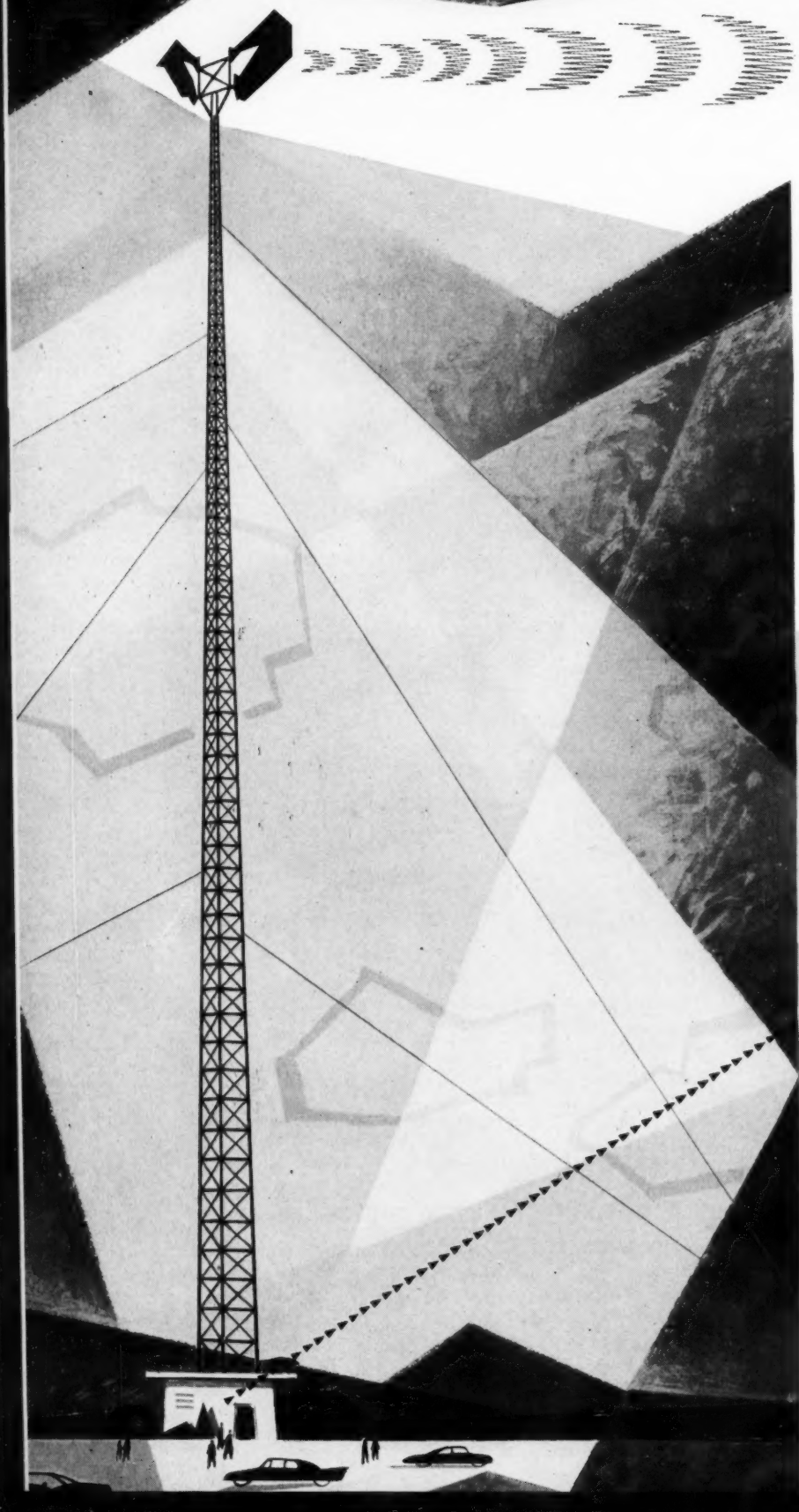
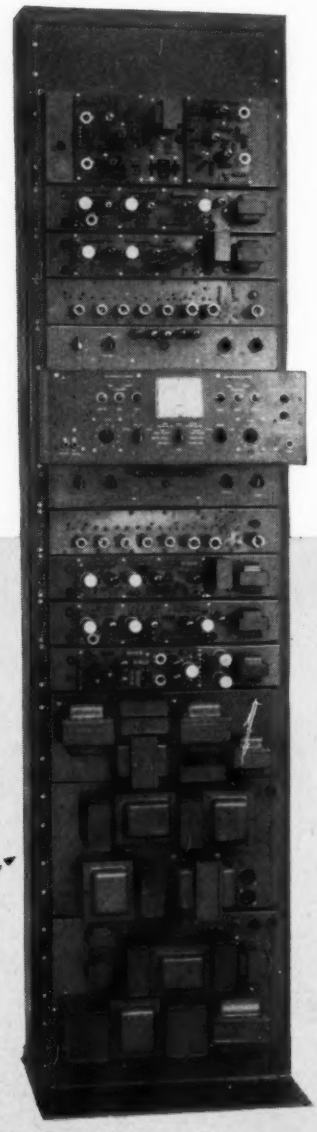
PHILCO *Announces*

NEW CLR-9 HIGH CH





The CLR-9 terminal (shown with covers removed) consists of wave-guide and preamplifier, IF assembly, baseband drop, modulator, reflector control, servo, master control and tubeless power supplies.

CHANNEL DENSITY MICROWAVE

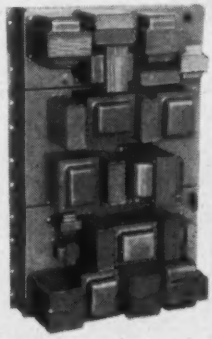
WITH 240 VOICE CHANNEL CAPACITY

Here is high channel density and outstanding reliability of operation—plus individual Automatic Standby for transmitter and receiver. The new Philco CLR-9 Microwave System is designed for quick installation in standard relay racks . . . and engineered with built-in metering and accessibility to all critical test points for easy field maintenance.

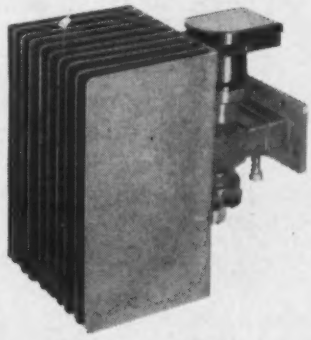
Performance reliability is sharply increased by the use of tubeless power supplies—new semiconductor rectifiers replace tubes. The use of printed wiring panels increases circuit stability—printed circuitry is keyed for easy identification—may be quickly replaced by maintenance personnel (permits efficient, centralized depot maintenance). Klystrons in the new CLR-9 are cooled by convection . . . the use of more compact heat sinks eliminates the need for bulky blowers.

The CLR-9's 240 voice channel capability is maintained even in repeater operation, to provide full duplex transmission and reception in both directions. Integrally mounted standby equipment is included.

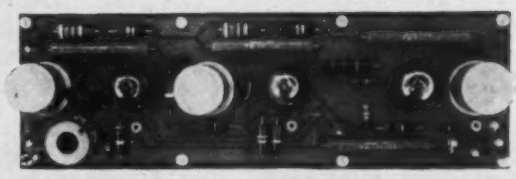
- **A new dimension in communications reliability . . . for continuous unattended operation.**
- **Baseband capacity for 240 channels or more.**
- **Peak performance at moderate cost—power supply capacity sufficient to accommodate both primary and standby equipment.**
- **Duplex transmission of wideband composite multiplex voice signals.**
- **Incorporates new low noise conversion and preamplifier circuitry.**
- **Integrated, fast, automatic standby selection included in one rack with individual back-up for transmitter and receiver functions.**



Heavy-duty, tubeless power supplies increase reliability by employing semiconductor rectifiers—assures minimum maintenance and very moderate operating cost.



Heat sinks cool the Klystrons by convection—compact CLR-9 needs no bulky blower system.



Rugged printed wiring panels increase circuit stability—easy identification simplifies maintenance.

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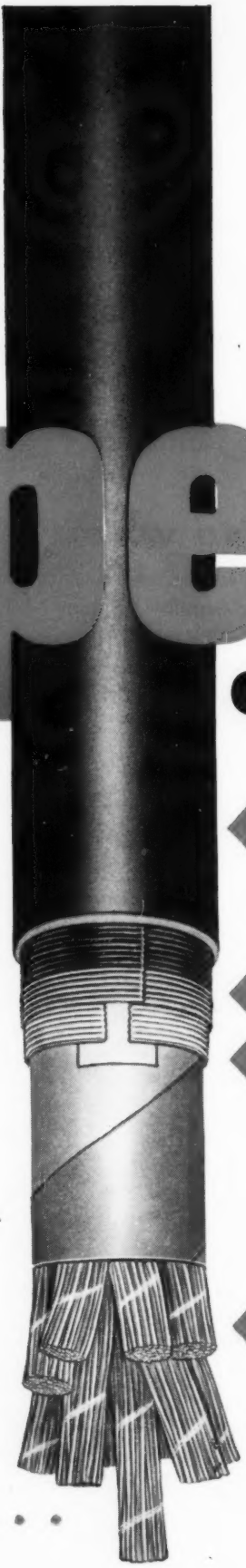

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

American lawyers hear story of socialization of Britain's utilities at American Bar Association meeting—unyielding and rigid regulation held reason. TV broadcasting making nearly billion dollars a year. N. C. Commission rules it can authorize commercial company to serve co-op's territory.

At the London meeting of the American Bar Association, the Section of Public Utility Law held several sessions with the collaboration of the British bar. At one of these sessions, the American utility lawyers heard an interesting account by three English colleagues, most concerned with this subject, as to why and how Great Britain came to socialize their three major utility services — gas, electric, and transportation — after more than half a century of successful development and satisfactory service under private company as well as some local municipal operations.

The socialization of English telephone service is not comparable because that happened at a very early date (1912) when the telephone industry had hardly gotten off to a real start. Rivalry between early Bell and Thomas A. Edison financial interests, as well as other foreign and domestic financial groups, had prevented unified development of telephone service in Britain on as satisfactory a basis as could have been desired. At any rate, Parliament passed a law early in the reign of George V directing the British Post Office to buy out the telephone properties from its private investors and it has been operated by the Post Office since.

The British gas and electric services, however, had succeeded in getting over this early pitfall of financial organization and consolidation. And while the pattern developed had resulted in a larger proportion of municipal plant operations than we have had in the development of these utility services in the United States, there was nevertheless a substantial private investment in both gas and electric companies. They were not finally taken over by the central government until the late forties when the postwar British Labor-Socialist Party of former Prime Minister Clement Atlee was in office. (Incidentally, the American lawyers were at first a little confused, and later amused, at the frequent use of the English word "undertakers"—meaning municipal plant operators. When the learned barristers, who were, in turn, surprised at the suppressed smiles on the faces of their American audience every time they used the common English term, found out later that Americans use that word almost exclusively for funeral directors, the Britishers agreed that it was, perhaps, a very striking coincidence in view of what happened to the private investment in these plants).

The British gas industry, in particular, had achieved a record of successful operation in the public service which had become a world tradition. As a matter of fact, it was a Scotchman, William Murdoch, who first demonstrated the successful extraction of gas from coal by steam pressure in a Soho foundry in 1792. The first gas utility company in the world, the old Gas Light and Coke Co. (which paid regular dividends for over a century) was incorporated in 1810 and granted a royal charter to serve London in 1812. Sir Walter Scott, who later became an investor and enthusiastic promoter, at first ridiculed the idea. "There is a madman," he wrote to a friend about Murdoch's experiments, "who proposes to light up the streets of London with smoke!"

And, so the streets of London were lit up and a surprising amount of illumination in London is still done with old fashioned gas jet burners and Welsbach mantles. In addition, much of the space heating load is handled by gas stoves. England has no natural gas and all oil must be imported at considerable expense. So manufactured gas and coal from the mines of Wales, also nationalized in recent years, are still the main sources of fuel for space heating. And, because so-called "central heating" (meaning heating by steam or hot water radiators) is more or less confined to the larger and more modern hotels, apartment houses and public buildings, the typical London "flat" is still heated, after a fashion, by coal grates or small gas stoves in every room where heating is desired.

Why, then, was this ancient gas utility company with such a long and honorable record of public service, and all the other English gas companies and municipal "undertakings" finally brought down by the capturing net of nationalization—to be henceforth operated as a socialized industry by a government ministry? Was it because the British gas companies were making too much profit, or being operated inefficiently? Had their service become unsatisfactory or their rates too high?

The answer to all these questions is "No." Leslie Stemp, member of the British bar, read a most comprehensive paper about what happened to the British gas industry, and why it was nationalized, to the American Section of Public Utility Law meeting in London

on July 29. It will be published (as will all the other speeches and papers delivered at both the New York and London meetings of the Section of Public Utility Law) in forthcoming issues of *Public Utilities Fortnightly.*

The paper by Leslie Stemp in particular will be well worth reading by public utility businessmen and women in the United States, because it is really a case history in utility socialism. It outlines economic developments affecting English gas companies which are already at work to some extent here in the United States. The steady deterioration of earnings between the two grindstones of inflation and rigid regulation was the main reason the British gas companies had to be taken over.

The gas companies were well managed and efficiently operated by their former private company operators. There was little quarrel with their service. But the plain fact was that they were overregulated. Stemp brought out that the British gas industry was the subject of investigation by seven royal commissions within relatively few years. And, in every case, the investigators recommended less rigid regulation, easing the pressure of political back seat driving. But, nothing came of all this—in fact the burdens only increased.

But, the regulators found that while they could restrict the price of gas and cut the industry's earnings, they could not restrict the price of coal, of labor, of equipment and all the other *expenses* of the gas companies. As a result the sources of private and municipal investment dried up. The industry was unable to attract capital to expand and grow at the rate required to meet its full obligation of public service.

Far from making too much money, the British gas companies were making too little. There was no outstanding or general demand on the part of the British public that the gas companies and the coal mines (in a somewhat similar economic plight at the time) be taken over. Government ownership came, as it were, by default. It was the only way out of a bad situation which had been brought about largely by unyielding and inflexible regulation. The socialized gas industry is still not making any money. But, now, it belongs to the people, and it is the British taxpayer who must pick up the tab.

The Television "Take"

It may surprise a good many people in the telephone business to know that such a relative newcomer in the communications field as television broadcasting is making nearly a billion dollars a year. That was the total TV broadcast revenues for 1956, which were reported by the Federal Communications Commission last week as amounting to 896.9 million dollars. The three major networks took in nearly half of this amount which is, of course, a record over all previous years. In fact, television broadcasting revenues have been climbing steadily every year since television got seriously started, following World War II, in the United States.

According to the FCC report, television broadcasting revenues were up 20.4 per cent over 1955. Broadcast profits before taxes also climbed to a record 189.6 million dollars—26.2 per cent more than in 1955. The three networks and their 15 privately-owned stations chalked up 442.3 million dollars in revenue from broadcasting; 18 per cent more than in 1955 and about 49 per cent of the 1956 industry total. The big three's profits jumped 26 per cent to 85.4 million dollars. The three networks are Columbia Broadcasting System, American Broadcasting Co., and the National Broadcasting Co.

But, all of the channels represented on your TV dial, as well as some that may not be represented if you do not have an ultra-high frequency channel set, are not sharing proportionately in this television boom business. As a matter of fact, there are 95 television systems (operating above channel 13) which are taking a beating. According to the FCC, they suffered a loss of 1.9 million dollars in 1956. The only silver lining of consolation is that they suffered a much worse beating in 1955 when the red ink splashed up to the level of 4.5 million dollars. All of these 95 high-channel stations were licensed after April, 1952.

Ninety-five stations licensed before a 1949-52 moratorium on new outlets reported profits before taxes last year of 89.7 million dollars, or 10 per cent above 1955. Their total revenues climbed 13.3 per cent to 260.7 million dollars. The 364 stations licensed after the ban had revenues of 193.9 million dollars. This was 21.6 per cent of the entire industry's revenues, as against 19 per cent in 1955. Of these 364 stations, 269 were VHF. They reported revenues of 161.4 million dollars, a gain of 43.9 per cent. But their profits nearly quadrupled, soaring from 4.8 million dollars in 1955 to 16.4 million dollars.

ACA Still Rosy Red

The American Communications Association (ACA), which has organized several districts of Western Union Telegraph, is still dancing to the tune played by Moscow, according to Sen. James O. Eastland (D., Miss.), who is chairman of the U. S. Senate Internal Security Sub-committee. This is the same union that was bounced out of the CIO several years ago for communistic affiliations and sympathies. Senator Eastland said that despite "revelations of its communist nature" the American Communications Association is still in a position to "destroy" U. S. communications. Eastland made the statement in a report issued by the Senate Internal Security Sub-committee of which he is chairman. He said the ACA "continues to be in a position to intercept vital messages or destroy communications lines running through New York in case of war or national emergency."

The report, part 44 of the sub-committee's series on the "scope of Soviet activity in the United States," also contained testimony of E. I. Hageman, president of the Western Union Division of the Commercial Telegraphers Union and J. L. Wilcox, vice president of Western Union. The testimony was given on Nov. 21, 1956. Since that time, the sub-committee has questioned eight persons connected with ACA, including its president, Joseph Selly. All eight refused to answer questions concerning communist party activity in the union.

On Aug. 23 the House of Representatives cited for contempt of Congress three communications workers who used recent U. S. Supreme Court rulings to refuse to answer questions about communism. This grew out of questions before the House of Representatives Committee on Un-American Activities.

The unusual thing about these particular citations was the fact that the red union members did not hide behind the usual Fifth Amendment of the Constitution which bars forced testimony tending to incriminate the testifying witness. Instead, the three contempt citations were based on a refusal of the witnesses to answer questions which they said did not pertain to any legislations which the congressional committees might be considering. The witnesses were relying on recent U. S. Supreme Court rulings to the effect that congressional committees have no right to expose individuals merely for the sake of such exposure. In those decisions, the highest court held that congressional committees must confine themselves to investigation designed to assist in the drafting or consideration of actual legislations to be proposed.

Cited for contempt were: Frank Grumman, of Fort Lee, N. J., secretary-treasurer of the American Communications Association, a union

representing workers in the communications industry. Grumman, a radio operator for many years for the Radio Corporation of America. Louis Earl Hartman, of Berkeley, Calif., a radio broadcaster for station KCBS of San Francisco, and Bernard Silber of New York City, a service writer for Western Union.

The sub-committee questioned the three as part of an investigation of alleged communist subversion in the communications field. Counsel for the committee argued that the investigation was needed to determine whether the Communist Control Act of 1954 requires further implementation. Grumman, identified by a witness under oath as a Communist Party member, declined to answer questions of a subcommittee on Un-American activities about his alleged Communist Party membership. Grumman challenged the committee's jurisdiction and declined to answer the questions on the grounds they violated his rights to free speech and assembly. He also cited the Supreme Court's ruling that a committee may not call witnesses merely to expose them.

Silber told the sub-committee he was a communist in 1948 but later quit. He used the Supreme Court's recent ruling to refuse to identify others as communists. Hartman, also citing the Supreme Court decisions, refused to say whether he is or ever was a communist. He said the questions infringed his rights under the First Amendment guaranteeing freedom of speech, press, and assembly. He also said the committee's investigation was not related to a valid legislative purpose.

Tar Heel Co-op Service

If a rural telephone cooperative does not feel like extending service to a remote subscriber within its service area, is that a good reason for the state regulatory commission to authorize and direct a commercial telephone company to extend such service? That was the question that the North Carolina Utilities Commission evidently decided in the affirmative when it ruled last July that Central Telephone Co. of Mt. Airy, N. C., should extend service to a lady subscriber whose home was located in territory claimed by the Randolph Telephone Membership Corp.—a co-op.

North Carolina Utilities Commissioner Sam Worthington, who wrote the decision, says he has "no quarrel" with rural telephone cooperatives as such. He just wants "people to have telephones."

Commissioner Worthington explained his position commenting on a resolution, adopted Aug. 21, by the Tar Heel Electric Membership Association. The delegates to the association's mid-year meeting in Raleigh charged that the state utilities commission had "materially retarded rural telephone development in North Carolina."

Three other North Carolina commissioners agreed with Worthington's decision but Commissioner Harry Wescott dissented.

Shortly after the decision, Commissioner Ralph Moody, who is no longer on the commission, wrote an attorney representing the Randolph group that "we do not think that the question of whether or not a telephone membership corporation has and holds a specific area or territory has been settled."

About a year earlier, on Aug. 6, 1956, the commission had ordered Central Telephone Co. (which is a commercial company) to provide service in a similar case involving subscribers in the same area near Asheboro.

Rural membership corporation backers evidently fear that the commission is beating down the boundaries of their territories. In their resolution, adopted at the Raleigh meeting, they accused the commission of protecting "the interests of larger utility corporations."

The delegates called on the commission to "change its attitude of noncooperation and hostility towards telephone membership corporations."

Remembrance of Things Past

Early this week, your correspondent received, in his office, his new telephone directory from a certain Bell subsidiary which shall remain nameless (except that its initials are C.&P.) It is a beautiful job of nearly a thousand and a half pages and weighing nearly four pounds. This is the residential directory alone. The "yellow book" is almost as big, in addition. The new book is both impressive and attractive. It lists about a half million telephone numbers which seems quite a good many for a metropolitan area, such as Washington, D. C., and suburbs, which has a population of somewhat more than a million and a half. It has a handsome blue cover with a color engraving of the Library of Congress.

Yet, when this writer found the old book had been taken away, there was that perennial period of panic. There were all those telephone numbers scribbled all over the old book, along with extension numbers of various government officials, and other odds and ends of daily information which cannot be categoried in an alphabetical telephone number index. The size of storm windows to be purchased, the name of a patent vitamin pill, and such minutiae of one's intimate life, are suddenly picked up and hauled off to the junk yard, or wherever the telephone company sends its old books. It becomes quite frustrating for several days.

In this writer's home, a much more sensible system is followed. Living on the edge of salt water surf, with periodic hurricane hazard, has toughened the hardy denizens of the Chesapeake Bay area to put not their faith in telephone books—nor any other material as flimsy as mere paper which can become limp and illegible overnight, in a good southwest gale. So, it has been your correspondent's custom for many years to put down telephone numbers, addresses, messages, and other seemingly important facts of life on the wall of a little closet where the telephone used to be.

Now the telephone has been moved to another room. So it is necessary, if you want to write down a number on this wall, to keep it in your mind while you find a pencil, open the closet door, answer a passing child's numerous questions, and shoo the dog away from the candy dish. Then, you make the necessary record. Sounds like this is not a very scientific system, but it is the way things are done at our house.

As a result, a rich patina of scribbling, extending over two decades, covered the wall—a veritable life record of important and unimportant happenings. There were the numbers of the butcher, the baker, the plumber, the doctor, the postoffice, Aunt Betty, and the kindly neighbor who would take care of our pets during a day or two of visiting. There were out-of-town numbers and addresses, distant relatives, and some mysterious entries which defied recollection.

But, like the old telephone book in the office, all such worldly things must come to an end sometime. Several days ago, in an excess of zeal generated by a general redecoration of the whole house, the better half decided (secretly, of course) "That Wall would have to go!" And go it did, under a few cruel unheeding strokes of the painter's brush. The best years of one's life were wiped out, leaving a bright clean glossy enameled surface which seemed utterly revolting. If only the telephone company could provide some indestructible form of memo pad—something big and substantial like a wall or the back of a door—that would be progress, indeed.

Advantages of

Dial Assistance Service (DSA)

By A. W. BAERRESEN*

OPERATING assistance in completing local calls for subscribers in automatic telephone exchanges offers opportunities to reduce costs and improve service. This article explains how these advantages result from Dial Assistance Service rendered by switchboard operators.

Many Independent telephone companies do not provide switchboard operators to assist the subscribers of automatic exchanges in completing local calls. The repair desk in these exchanges generally furnishes some assistance to calling subscribers, such as verifying the working status of numbers being called, and checking the condition of the called lines, but as a rule, connections are not established for the subscriber.

The Bell System practice, from the beginning of Bell's operation of automatic central offices, has always been to provide operators to assist a subscriber in reaching a station being called when this subscriber's dial attempts have failed. Bell has always provided the one-digit dial code "0" to make connection to an operator who will render this service. The word "Operator" is spelled out in the 10th dial hole and subscribers are instructed to dial "Operator" when encountering call-completion difficulty.

Customer-dialing errors and irregularities have always been a problem in the larger metropolitan exchanges, especially in those exchanges having a heterogeneous class of customers, and having longer telephone numbers with prefix letters. There is, of course, a greater possibility of dial call failure in a large multi-office exchange due to faulty equipment and trunk circuits, than in a small single exchange.

Small automatic exchanges, in the past, have required only three or four-pull numbers without letters and with little or no subscriber dialing over inter-office trunks. Thus, much of the customer dialing in Independent exchanges has been simple and the customers are generally familiar with local telephone conditions. Operators' assistance to subscribers for local calls has, therefore, been considered unnecessary by many managements of small exchanges.

However, with the advent of extended service, customer toll dialing and the national 2-5 numbering plan, the once small, simple, isolated exchange is becoming more like the larger metropolitan exchange, in respect to the potential difficulties encountered in customer dialing.

Customer dialing irregularities which affect call completion, range from 0.2 per cent to as high as 3.5 per cent of the total subscriber-dialed calls, depending upon the number of dial pulls, and the ability and understanding of the customers.

Dial Assistance Service provides operator help to a dial customer, in establishing a connection, when the customer has encountered difficulty in reaching a station which he must normally dial for himself. It is, therefore, a traffic function.

This operating service is generally referred to as "DSA" service. "DSA" is an abbreviation of "Dial System A," the original designation for the switchboard used for this service.

Provision of regular assistance operator service should prove advantageous to the telephone managements of most automatic offices, provided that this traffic function can be assumed by the operating team handling the short-haul or the total toll calls.

If the toll operating is done by another company, of course, arrangements must be negotiated to have this service rendered at the toll switchboard of that company.

The volume of dial assistance calls will vary considerably between exchanges, depending upon the extent of the dialing area and other local conditions. For small detached exchanges, the assistance calls may be as low as 0.1 per cent of the total originating calls, while in metropolitan areas this per cent may be 1.5 per cent or higher.

However, each subscriber request for assistance in completing a local call, offers an opportunity to better satisfy the customer with the telephone service. Each of these requests represents a subscriber's dial call which has failed to be completed. When such requests are recorded, they collectively provide administrative data which are very effective indications as to extent and location of traffic congestion and plant troubles.

Customer instruction and call assistance reduces ineffectual use of equipment. Ineffectual subscriber-dialing attempts are costly in terms of false use of equipment and circuits. This futile use of plant involves considerable investment when several exchanges and inter-office trunks are available to subscribers' direct dialing under extended service arrangements, and especially when toll lines and toll dialing equipment are accessed directly by customers under automatic ticketing operation.

Analysis of assistance tickets is advantageous in pointing out the extent of call failures, the central office paths of traffic congestion, the probable location of plant faults, and the individual customers needing instruction. Special tabulations of the numbers being called on requests for verification of "line

*Mr. Baerresen is a telephone traffic consultant. He authored a two-part article on "Terminal-Per-Station Operation of Telephone Party Lines" which appeared in the Aug. 25 and Sept. 1, 1956 issues and one entitled "Traffic Line and Terminal Assignments in Automatic Equipment" in the Aug. 3, 1957 issue of TELEPHONY.

busy" may be valuable in pointing out over-loaded individual business lines and PBX trunk groups.

If these administrative data are properly applied, more effectual use of the automatic equipment with lower maintenance costs should result. With assistance operator service in effect, a subscriber's call to the repair desk should be occasioned only because of trouble with his telephone instrument or line. Subscribers should be encouraged to dial "operator" when they have call completion difficulty. Assistance operator reports to customers, advising of the working status of called numbers, should reduce calls to information, especially when complete intercepting service is not provided.

DSA service must be handled at a switchboard, where a traffic operator may make attempts to reach the called station and to establish the connection for the subscriber. These operators require access to the test train for verifying "busies" and for re-establishing "cut-offs;" also for completing emergency calls to busy subscribers' lines under certain conditions.

Assistance service is usually combined with short-haul toll traffic (where the latter is separate from long distance toll), or combined with all toll on a toll board reached by a single code, such as "O."

The same cord circuit and local dial trunk equipment is used for assistance calls, as for short-haul toll calls; and the answering phrase, "Operator," applies to all calls answered on the "O" trunks. Twenty-four hour assistance service is thus available.

Where full interception of all non-working numbers is given, the DSA operator does not need access to a complete "status-of-terminal" (verifying) record. However, she does need a bulletin which lists the PBX hundreds and the non-working 100's and 1000's groups. For offices having partial or no intercepting, the DSA operator must verify the working status of a number reported as "no ring" or continual "don't answer."

DSA Operators' Practice

The dial assistance operator performs the services listed below for subscribers who fail to reach numbers which they have attempted to dial. She connects the subscribers to the called station if she is successful in reaching it. The operator gives instruction to the customer when this is appropriate. (The method of operation outlined herein may vary, of course, with local conditions and practices).

(1) On subscriber reports of continual "busy," the DSA operator dials the called number on a test trunk and advises that the line is in use or is out-of-order as the case may be; except before reporting "out-of-order" she checks to make sure it is not in a PBX group. If it is a PBX, she dials on a regular trunk and reports all lines busy if a busy signal is received.

(2) On subscriber reports of continual "don't answer," the DSA operator dials the called number on a regular local trunk, and if ringing signal is received, states, "They do not answer." However, if the called office does not have full intercepting of all non-working numbers, she must first refer to the verifying record for the status of the number.

(3) On subscriber reports of "no ring," the DSA operator dials the called number on a regular trunk. If ring-back tone is not received, and the called office does not have full intercepting of all non-working numbers, the status of the terminal is verified. If the terminal is shown working, or if full interception is given (in which case the verifying record need not be consulted), the first dialed connection may be held and an attempt made on a second trunk. If a busy signal is now received, both trunks may be released and the number re-dialed, except for the last two digits on one trunk and completely dialed on a second trunk. In this case, the station may be rung if the first connector seized is out of order. The condition is then reported to the switchroom.

(4) On subscriber-reports of "busy" before completion of dialing (overflow), the DSA operator explains the condition and makes attempts to complete the connection.

(5) On subscriber-reports of encountering the "misrouted call tone" (vacant level), the DSA operator checks the bulletin for vacant levels. If the called number is in a working series, she makes attempts to complete.

(6) On subscriber-reports of a wrong number being reached, the DSA operator attempts to reach the desired number and reports any trouble indicated to the plant department. If a charge is involved in the subscriber's call, such as a call from a message rate or a coin line, or to an automatic toll ticketing point, a credit ticket is prepared.

(7) On subscriber-reports of poor transmission, the operator makes an attempt to establish satisfactory connection, and advises that trouble will be reported if satisfactory connection cannot be made.

(8) On all calls for the fire department, police, ambulance and other official emergency services, the DSA operator immediately completes the call according to her bulletin, and takes such precautionary measures as her practice requires.

It may be desirable to have the operator "hold for tracing" certain connections on which she encounters equipment trouble, if the called office is covered by a switchman and if busy interoffice trunk groups are not involved. The "held" operator's dial trunk should be connected to a "tracing-tone" jack, and the case immediately reported to the proper switchman. The tracing tone permits locating the connection at the called hundred group connectors without tracing through (if the call has progressed that far).

Assist Call Tickets

On subscriber reports of "no ring" and "can't reach" (other than "line busies" and "don't answer") and on reports of "busy before finishing dialing," poor transmission, and wrong number reached, the best practice provides that the "DSA" operator prepare an "assist ticket." On this ticket, she writes the calling and called numbers, and enters check marks opposite items on the ticket to indicate the difficulty reported by the customer. If it appears that the customer needs dial instruction, this is also checked.

The assistance ticket is made out for every assistance call (excepting for those involving busy-line verification and called station don't answer), regardless as to whether or not the operator has encountered difficulty in attempting to complete the connection. These tickets are sent to the wire chief for the office of the calling number. From the details contained on these tickets, he enters stroke marks on summary forms having spaces for each originating equipment group, the outgoing trunk groups, the terminating offices, terminating thousands and terminating hundreds.

Different colors may be used for the various types of reports, such as "can't reach," "cut-off," transmission, overflow, etc. The patterns developed by the stroke mark accumulations indicate locations of probable plant troubles and traffic congestion.

By this practice, together with other methods of analyzing for faulty equipment, much routine testing of switches and trunk circuits may be eliminated. The plant may thus be kept in a better condition with less maintenance expense. With equipment freed of trouble and customers properly instructed, assistance calls should diminish in volume.

Conclusion

The provision of adequate, well-maintained equipment is only part of

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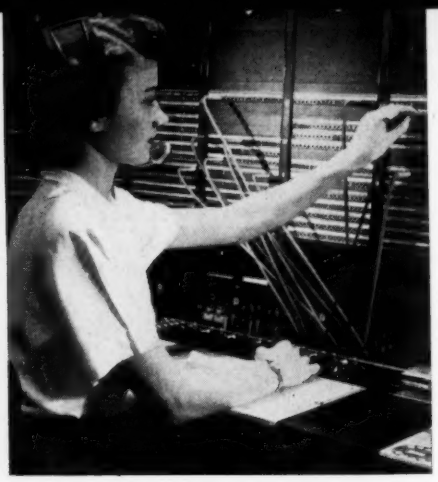


THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

THE "OLD-TIME BELL OPERATORS" in Springfield, active and retired, get together for a reunion each year on the last Thursday in July. They started out having picnics, but for the past few years, they get together in a comfortable air-conditioned eating establishment. This year their dinner was held in "The Lincoln Room," at the Howard Johnson restaurant, a private dining room.

What do the girls talk about when they get together? There are two major topics—telephony and their grandchildren. You should have seen the pictures being passed around, of sweet little youngsters, the pride and joy of Grandma.

Not having any grandchildren to boast of, the chairman of the meeting invited me to give a résumé of my trip to the Hawaiian Islands, which I was most happy to do since this is one of my favorite topics. To lend a little color to the talk, I wore my *Holamu* (Hawaiian party dress) leis, etc. My good friend, Genevieve Sauerhage, secretary to Buron W. Saunders, president of General Telephone Co. of Illinois, brought her screen and projector and showed pictures taken in the islands during my visit.

I also took my record player and played the recording of the Overseas Conference Call, which took place while I was visiting on the island of Kauai. Pete Reno, editor of TELEPHONY, J. B. Haley of Austin, Tex., officials of the Hawaiian Telephone Co., and the writer, enjoyed this lovely surprise call arranged by the Hawaiian Telephone Co. The record was made from a tape recording and was presented to me by William B. Kea of the Hawaiian Telephone Co.

We played "The Little Brown Gal," a favorite song of the Islands, which I sang at the annual meeting of the John A. Balch Chapter in Honolulu, one of the chapters of the Independent Telephone Pioneer Association.

There were a few gentlemen present, which I had not counted upon, and I was glad I wore my *Holamu* and not my grass skirt.

One of the girls asked me if I remembered the day Bishop Griffin came to Springfield. I told her I did have a faint recollection of his arrival. She reminded me that she had asked to be excused, and her girl friend had also asked to be absent for this occasion, but I failed to grant their request. I was chief operator in the Bell office at that time, I presume, and did not feel that we could spare the two operators from the switchboard. She also told me that they did not report for duty and went to see Bishop Griffin arrive.

Then, she stated, we were afraid to come back to work as we thought you would fire us. As a matter of fact, I didn't. I said, "Were you really afraid of me?" and she said, "You bet we were. You were stern in those days." I guess I was, as that is what was expected of a chief operator in that era.

This incident reminds me of the little Jewish boy who had been expelled from every school in his community for insubordination. His father told the local Catholic priest about his problem and the priest said, "Send your son over to our school and we will see what we can do with him." The father demurred but finally decided to give the Catholic school a try. Days and weeks went by and the boy was still going to school and making excellent grades.

Finally his father could not contain his curiosity any longer and he said to the boy, "How is it you are doing so well in school when you were expelled from every other school you attended after the first or second day?" "Well," said the boy, "When I walked into the classroom and saw that man nailed on the cross, I knew they meant business." I guess that is what the girls thought about their chief operator in those days.

Many things have changed since the "old time operators" started in the telephone industry. But there has been no change in the value of telephone service. We may pull a key, press a button, or set up a number on a dial, to complete a telephone call—it is still the objective of the telephone company and the operator, to give pleasing, accurate, and prompt service to each customer.

Speaking of reunions, a few weeks ago all six of the girls who graduated with me from the eighth grade, got together to talk over our school days, and what a happy reunion it was! The time passed all too quickly. There were six boys in our class, too, and four of them are still living. One of the six girls in our class has recently retired as a schoolteacher, four are housewives, and you know what the sixth one is doing.

The retired schoolteacher is planning to take up other work in her field, as soon as she has enjoyed a prolonged vacation. She told us in the more than 40 years she taught school, she only missed three days due to illness. What a record! She is of the old school and no doubt there were many days when she could have, and perhaps should have, stayed at home, but didn't.

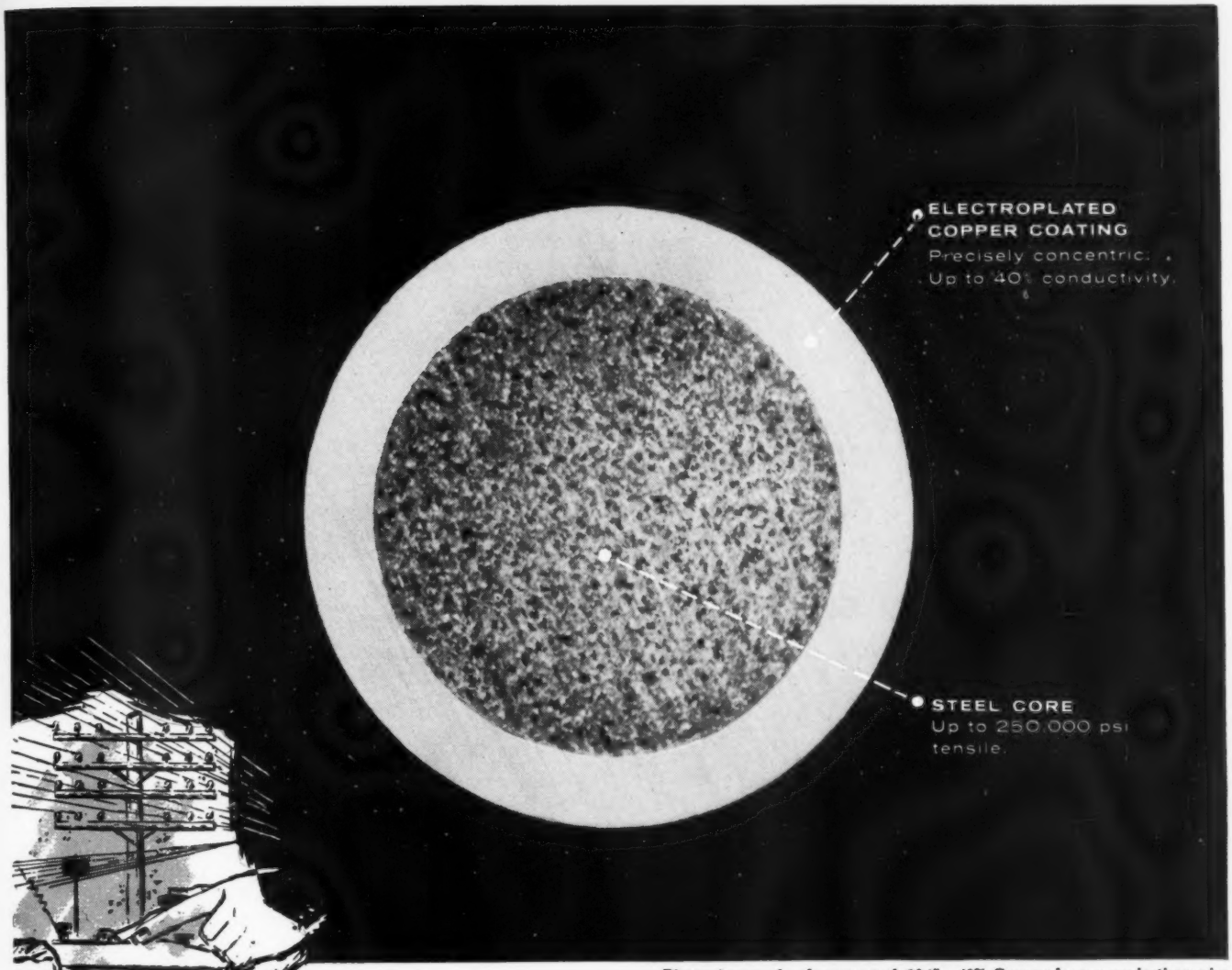
Reunions are fun and it is always surprising to see how people have changed during the intervening years, until you take a peak at yourself in the mirror and realize that you, too, have changed.

The Pioneer organizations in the Independent & Bell field are wonderful for keeping in touch with former friends and co-workers and every telephone man and woman who is eligible to belong to these fine organizations should be proud to become affiliated with them.

Traffic Questions

(1) If an outward operator receives

(Please turn to page 61)



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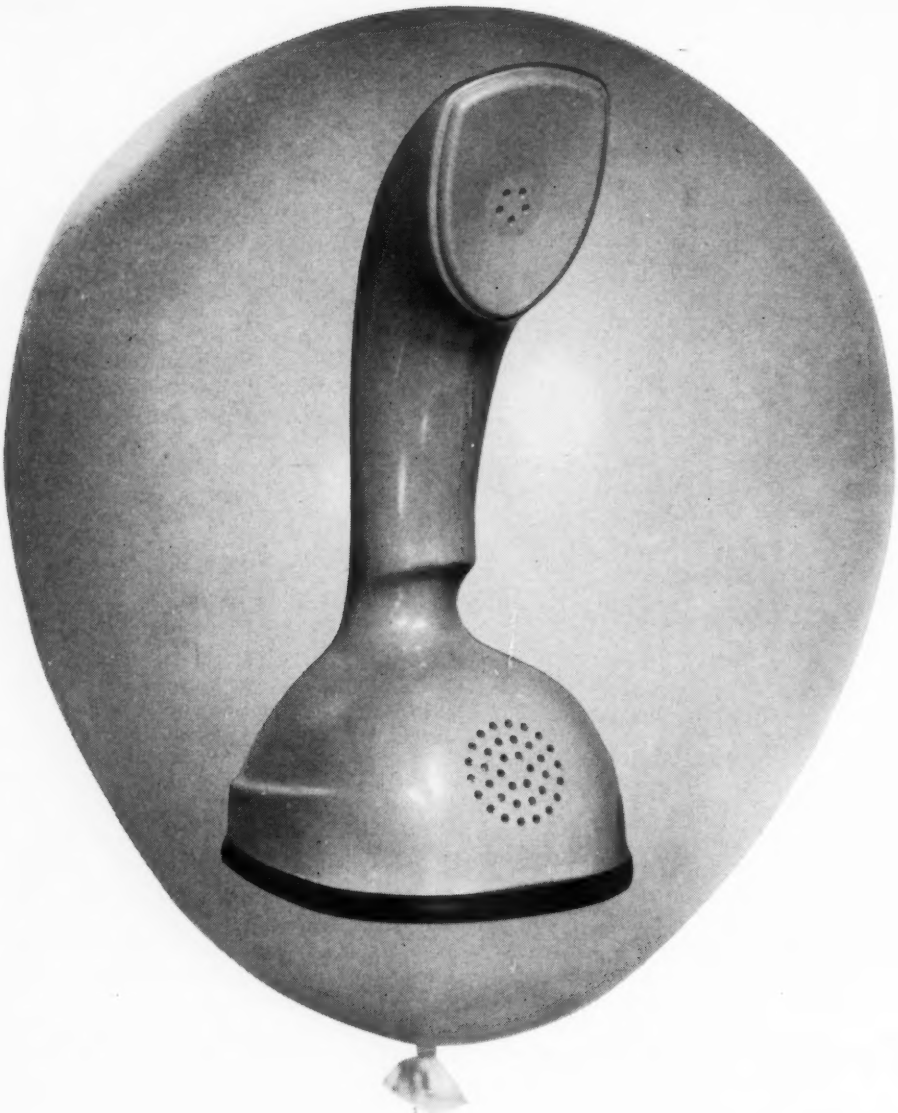

Oooh

XUM

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THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE HAD THE PLEASURE recently of inspecting and talking over a new microwave telephone system. We must admit that these new pole lines in the sky are really something to be proud of. And coming from an old wire man, that is really something, but we do mean it in all sincerity. There is no doubt that we are to see a tremendous increase in this type facility during the next several years.

•

In a recent letter, Howard D. Buckles, of Kansas City, recommends the use of an inverted metal cone similar to a rat guard on a ship's hawser to keep squirrels off cable poles.

We are sure that this will prevent squirrels from climbing poles as we used this method to squirrel-proof our bird feeder last winter. Unfortunately, however, squirrels usually reach cable by jumping from nearby trees. And if you don't think they are master jumpers, just watch them some time!

•

We have a copy of "The Post Office Electrical Engineers' Journal," published by the G.P.O. London, sent us by a friend in Ireland. One item of interest is a reproduction of a label removed from a cable spice that is described as follows:

"The label reproduced below was recovered from the interior of a joint on a 400/10 P.C. Twin cable in St. Paul's Road, Portsmouth, in February 1955.

"Despite the age of the joint there was no discoloration of the label, and the inscription in ink, was as legible as when placed in the joint 47 years ago.

"The condition of the conductor joints, paper sleeves and insulation was unimpaired by the passage of 47 years. This is the more remarkable as, in 1940, a large church and public hall in St. Paul's Road were destroyed by fire after bombing, and the small manhole containing this joint was covered with burning debris and inundated with water from the fire-fighting operations.

"This certainly supports the contention that a well-made cable joint should last 'forever,' if it is not disturbed."

•

The Blain household has always catered to its numerous pets, but perhaps the oddest of the lot is a terrapin that has been with us now for over 16 years. We know it is the same one for when we first moved into our new house we hit him in the high grass with a lawn mower and cut his shell. We thought he was done for, but treated him as best we could and finally the shell started to heal and eventually he disappeared.

Each year since then he has made regular visits to our compost pile—apparently on scavenger expeditions. We often leave food for him which he appears to relish. He still carries the big scar on his shell, but from all indications he is a healthy, happy terrapin. In extremely dry weather he comes out where the flowers are being watered, but most of the time he hides out in the underbrush of a vacant lot next door.

This spring our pet terrapin arrived with a young one in tow. Now we are not certain whether our pet is a father or a mother, but we are sure it is our friend and pet.

•

The Supervisor's Prayer was developed by government workers in the Nation's Capitol, but perhaps it might be adapted to telephone supervisors as well. It is as follows:

"Dear Lord, help me to become the kind of supervisor my management would like me to be. Give me the mysterious something which will enable me at all times satisfactorily to explain policies, rules, regulations, and procedures to my workers even when they have never been explained to me.

"Help me to teach and to train the uninterested and dimwitted without ever losing my patience or my temper.

"Give me that love for my fellowmen which passeth all understanding so that I may lead the recalcitrant, obstinate, no-good worker into the paths of righteousness by my own example, and my soft persuading remonstrance, instead of busting him in the nose.

"Instill into my inner being tranquility and peace of mind that no longer will I wake from my restless sleep in the middle of the night crying out what has the boss got that I haven't got and how did he get it.

"Teach me to smile if it kills me.

"Make me a better leader of men by helping develop larger and greater qualities of understanding, tolerance, sympathy, wisdom, perspective, equanimity, mind reading and second sight.

"And when, Dear Lord, Thou hast helped me to achieve the high pinnacle my management has prescribed for me and when I shall have become the paragon of all supervisory virtues in this earthy world, Dear Lord, move over. Amen."

•

The National Safety Council again reports that the communications industry continues to hold its place as the safest of all industries.

•

An article in the National Geographic Magazine by Paul A. Simple tells as follows how they were able to make telephone calls from the South pole via ham radio:

"It is wonderful, too, to be able to talk occasionally with our families back in the States. When radio conditions are good, amateur operators are able to make radiophone patch connections right to our home-town telephones.

"On the day after Christmas, and again at ten minutes to 12 on New Year's Eve, I had a chance to talk to

XUM

my family in Arlington, Va.; the other men have completed similar calls.

"The funniest telephone call was made by Wille Hough, our seismologist and ionosphere observer, soon after he came in by plane. He wanted to let Mrs. Hough know he had arrived safely, but somehow was given a wrong number on the telephone patch.

"The man who answered at first accepted the reversed charges, but hung up when Wille asked: 'May I speak to my wife?' I wonder if he was able to make his friends believe that he had been awakened at 1:30 a.m. by a wrong number call from the South Pole!"

•

We have a letter from James F. McHenry, of the Capital City Telephone Co., Jefferson City, Mo., in which he says: "Cheers unending for your thoughts on numerals instead of exchange names."

Mr. McHenry adds that the only argument he has ever heard in support of names is ease in remembering.

•

We are in receipt of a letter from John Cushing, of the Sitka (Alaska) Telephone Co., and also a copy of his new telephone directory.

John reports that the bright red cover is used as his customers advise it is easier to locate than the traditional gray formerly used on directories.

•

A recent press release describes the first electronically automatic telephone exchange in England. This exchange is a 200-line unit that makes use of the "magnetic drum" storage technique.

Advantages claimed, as compared to conventional switching systems, are exceptionally high switching speeds and, with progress being made in miniaturization of electronic components, the possibility of housing in a smaller space.

The nerve center of the new system is a magnetic drum memory device. This drum decides the most suitable routes to establish a connection, records the state of trunking of the exchange and, also, provides a register for each subscriber.

If the dialed number is busy, a signal is received, but it is only necessary to hang up and when the called number is released the equipment will automatically ring both calling and called subscriber.

It is cited that introduction of electronic switching on a large scale is likely to be governed by reliability of components so that progress being made in the use of semi-conductors and printed circuit techniques is likely to become important in the future.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. We have some manholes, located in low ground that are partially filled with water the greater part of the time. Can you recommend a method that can be used to keep manholes of this type dry?

A. It may be possible to drain the manholes into a sanitary sewer if one is available. If this is done, however, it is necessary to make certain that the drain is properly trapped to prevent the entrance of sewer gas.

There are some manholes that cannot be drained. In such a case, it is necessary to pump them out and perhaps keep the pump running during the time the men are working in the manhole. Water in a manhole does not usually cause trouble providing all splices and the cable are water-tight.

•

Q. What type of howler should be used to signal customers who have left their receiver off the hook in order that they will replace it, and so that we will not be required to make a service call?

A. One type of howler now on the market produces a distinctive tone that demands attention yet at the same time it is also loud and safe. When this howler is placed on the line, the customer, if at home, cannot fail to hear the distinctive signal and will not mistake it for any other familiar sound. This will cause a peristent search until the sound is located and the receiver replaced on the hook.

This howler starts at a very high frequency with a low amplitude, increasing in strength slowly. This feature gives warning and time for anyone who happens to have the receiver to their ear to take it away before the sound increases to the point where it causes pain.

Then as the tone increases in strength it decreases in frequency, passing through that part of the audible range to which the human ear and the telephone receiver are most sensitive.

The frequency range covered by the signal is wide enough to cover all normal variations in telephone receivers and human ears so that at some time during the cycle each receiver will be energized with the frequency to which it responds best and each customer will be stimulated by the note to which his ear is most sensitive.

The signal tone reaches its maximum strength at the low end of the frequency range and then stops, starting again with the high-frequency, low-volume note. This cycle is repeated at intervals of roughly 5 seconds.

This action affords maximum safety to the customer because another receiver on the line, picked up while the howler is on, either sounds off loud enough to insure against its being placed directly to the ear, or starts off slowly enough to give time for its removal from the ear.

•

Q. Will it be possible to use a stapling machine to attach small plastic cables to baseboards on inside runs?

A. Yes. Staplers are available which can be used to hold inside or outside cable up to ½-inch in diameter.

•

Q. When loading coils must be used on rural distribution wire, how may they be pole-mounted?

A. We suggest that you consider the use of a terminal-loading case now on the market. This cast aluminum combination terminal box will also accommodate 88-MH or 44-MH loading coils. The device is designed for use in six, 11 and 16-pair rural distribution cable.

•

Q. If diversion equipment is used to prevent PBX customers from dialing trunk calls of more than one unit, must all extensions be so restricted?

A. No, since various arrangements may be provided so that certain stations may dial all outside calls without restriction. These special arrangements add very little to either the cost or the complexity of the equipment.

TROUBLE CLEARING

The Night Alarm Circuit (Section III)

By L. N. MARTIN

EVEN IN the driest weather the outside telephone plant will show some leakage and this leakage increases as the humidity increases, reaching a peak during a heavy and prolonged rain. A general term used for the combined leakage of all of the exchange lines is "Plant Leakage."

Open wire leakage is caused by wet or damp insulators, especially when they are dirty; also by small limbs touching the wires. As drop wires age they will show a measurable leakage long before they develop actual trouble. Cable terminals show "Face Plate Leakage" in humid weather even though the covers may be rain proof. Station protectors located in an outside mounting or in a damp basement will have some leakage.

Every exchange line in the plant may be well within the leakage resistance limits and yet the combined leakage may be high. Suppose that one line has a leakage resistance of 100,000 ohms. This is not serious and will not interfere with service in any way.

PART 59. The preceding article in this series appeared on page 20 of the Aug. 31 issue.

However, 100 such lines will have a combined resistance of 1,000 ohms, or about the same as one line with the receiver off, and a thousand such lines will have a combined leakage resistance of only 100 ohms. The "Plant Leakage Current" of a large exchange may be several amperes even in dry weather.

In the conventional common battery manual exchange this leakage current flows through all of the line relays in parallel, and thus each relay receives the leakage current of only one line.

In our preceding article (TELEPHONY, Aug. 31) we showed that the current through the night alarm relay goes to the line lamps only and not out on the lines. Hence, no amount of plant leakage can affect the night alarm relay. However, there are in service many small common battery manual boards (and a few quite large ones) which do not have line relays. In these boards the battery goes through the line lamp to the ring side of the line and the tip side of the line is grounded at the jack. (When a plug is inserted in the cut-off type jack this battery

(Please turn to page 32)

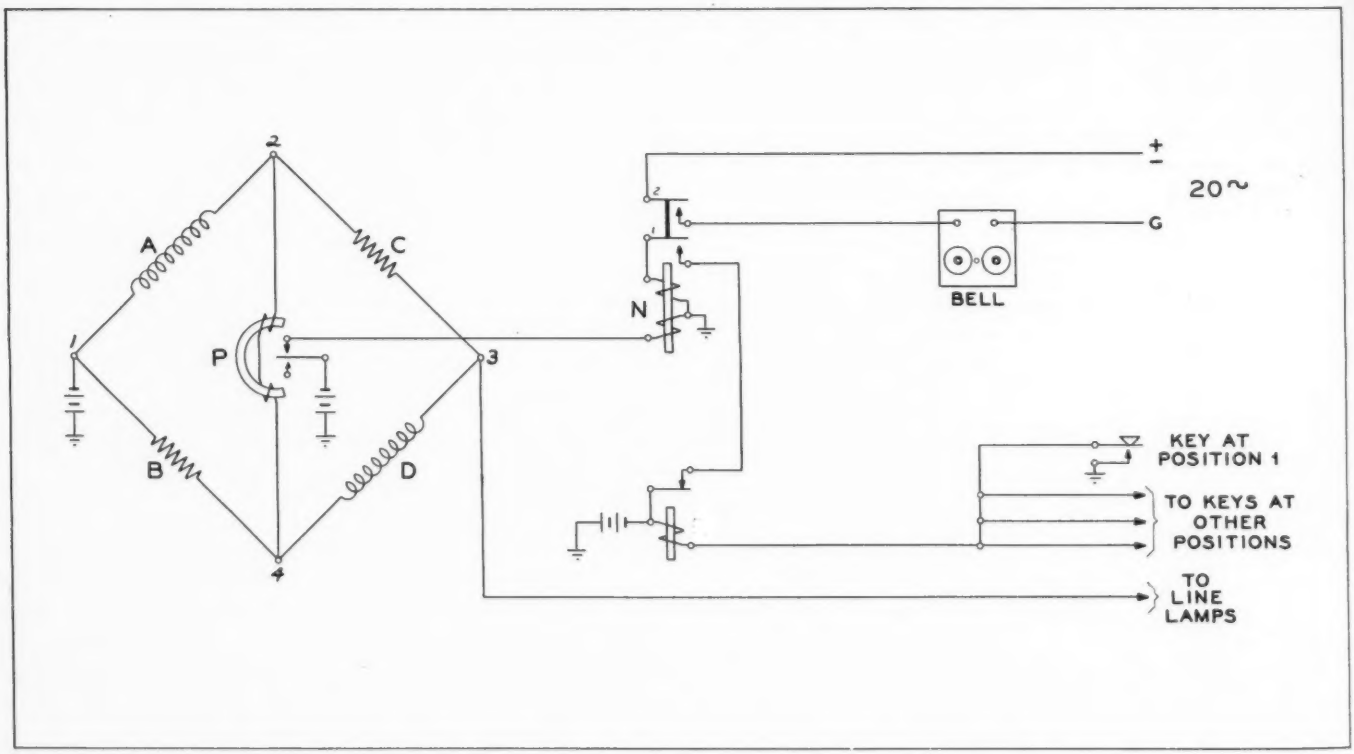


Fig. 1

NEW Holan derrick "stretches" to handle long poles

Lifts heavy loads in low ranges, body-loads 4,000 pounds, comes low enough to power-feed diggers

No conventional derrick, this one. It has an extendible boom head that "stretches" the derrick an extra five feet (to 28 feet high) for handling poles up to 75 feet long. Yet, with boom head extended, little lifting capacity is lost. In a position about 10 degrees off vertical, it lifts 8,000 pounds; with boom head extended, it still lifts 6,000 pounds.

Two sets of cylinders provide greater lifting capacity in low ranges. Auxiliary lift cylinders raise the derrick almost to vertical, then the main lift cylinders take over.

Three other important features: (1) You can body-load 4,000 pounds (2) You can bring the derrick low enough to use digger power feed attachments (3) You can operate more safely by checking the new easy-to-read load indicator which gives capacities at all derrick positions.

Like other Holan derricks, this one is made of high-tensile steel and fits any body on its own supports. It also has Holan's lighter-but-stronger fabricated side legs. We'd like to tell you more. Write and ask about the Holan Series 6800 Power Derrick with or without Extendible Boom Head.

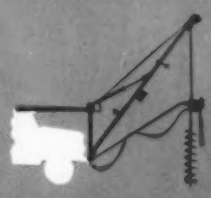
All Holan bodies are made of hi-tensile, rust-resistant steel 20 to 25% lighter than ordinary steels.

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

Service bodies for chassis up to 1½ ton. Lengths, 72", 84" and 102".

Aerial arm for spotting workmen 37 feet above ground, 9 feet below ground level. Double-basket unit extends 45 feet. Rotates 360°.

Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.



Portable hydraulic and mechanical earth borers. Augers for 8" to 20" diameters, depth to 8'.

Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

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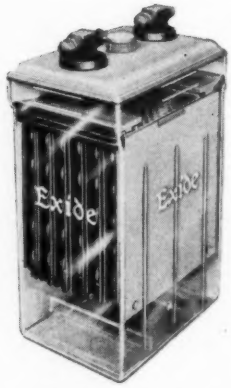
THE NAME THAT MEANS WORK SIMPLIFICATION

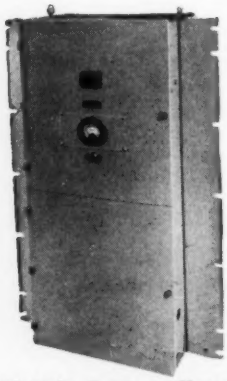
Kellogg Line Supplies Parade

Kellogg has been offering the best in line supplies for longer than an elephant can remember. These supplies are delivered promptly, too. Kellogg's strategically located warehouses and distribution points assure you quick delivery.

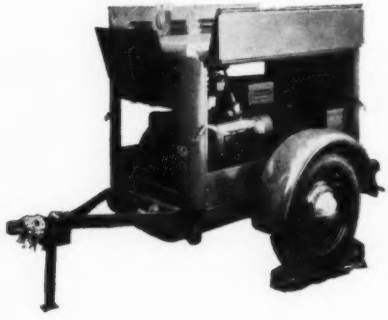
The Cook Hy-Cap Power-cross Protector is designed for use where there is a possibility of contact between communication circuits and power circuits. It also will furnish considerable protection from lightning damage. A product of COOK ELECTRIC COMPANY.



The Battery That Stays Young for Years. Built right into the Exide-Manchex Battery is a reserve supply of lead that converts automatically to active material as it's needed during the battery's long life. Hence, it keeps its full capacity for years. Exide Industrial Division, THE ELECTRIC STORAGE BATTERY COMPANY.

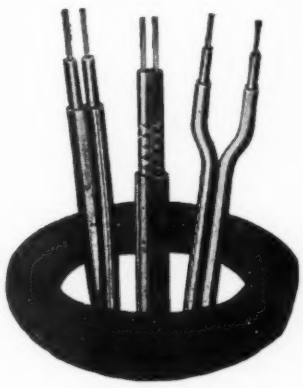


New 48-Volt Battery Charger Line. Completely redesigned Raytheon Recti-Chargers (R) feature no load to full load regulation of ±1%, no tubes, automatic compensation for rectifier aging, no audible hum. Most compact units on the market—single and three phase, output from 30 to 400 amperes. RAYTHEON MANUFACTURING COMPANY.

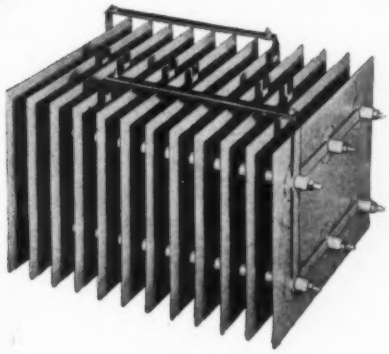


Maintenance Generator—Equipment includes toolbox, fuel tank, safety chain and chocks, taillight and reflectors, and sheet-metal house with hinged sides, hinged front cover. Available with or without generator—92" long, 53" wide, 51" high. With generator, weighs 800 lbs. S & G MANUFACTURING CORPORATION.

XUM

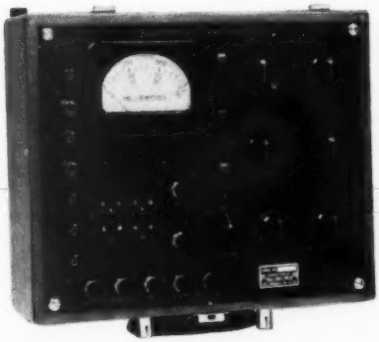


Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.



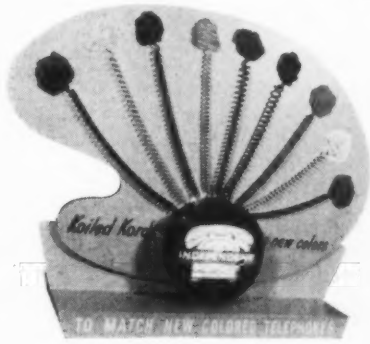
Lorain Dry CEMF Cells—Lorain's important new product for eliminating telephone office maintenance associated with liquid filled cells. Light in weight, portable, safe, completely flexible as to voltage and current ratings.

LORAIN PRODUCTS CORPORATION.



Shallcross No. 696 Test Set completely self-contained, portable, five separate circuits for testing relays and similar electromagnetic devices of telephone and telegraph equipment. Five independent and separate test conditions may be set up at the same time.

SHALLCROSS MFG. COMPANY.



Koiled Kords—Customer satisfaction and long service life are assured with Koiled Kords retractile telephone cords. Black cords available for replacement. Black and colors available for use on all new equipment. Made by KOILED KORDS, INCORPORATED.

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A Division of International Telephone and Telegraph Corporation

Sales Offices: 6650 S. Cicero Ave., Chicago 38, Ill.

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KELLOGG Branch Warehouses and Offices:

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Nestor 5878

1515 Turtle Creek Blvd.
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OXford 7-5780

1555 West Fourth Street
Mansfield, Ohio
Mansfield 7-2816

1594 Southland Circle, N.W.
Atlanta, Georgia
Sycamore 4-2441

and ground is removed from the line which now receives battery and ground from the cord circuit.)

This type of board is good for a small office as its first cost and maintenance are lower than for a board with line relays, also the space usually occupied by the relay rack is saved. Such boards became satisfactory when a line lamp was developed which would operate on a large variation in current. The lamp must be fully lighted when in series with the longest permissible line (usually 1,000 ohms) and yet must not burn out on the shortest line, or even when exposed to a dead short for a reasonable time. Lamps of this kind, now on the market, are very satisfactory.

If the type of board just described had a conventional night alarm circuit, the plant leakage current would flow through the winding of the night alarm relay at all times. Now a relay may be given a "non-operate" and "release" adjustment that will prevent its operation on a leakage current of known and constant value and yet permit its operation on a current of some what higher value. This is called a marginal adjustment.

However, in this case such an adjustment is impossible for two reasons: (1) The leakage current is not constant but varies over a wide range, and (2) the margin between the leakage current and the leakage current plus the current due to removing one receiver is entirely too narrow to permit adjusting a relay to it. For this reason these boards require an entirely new approach to the night alarm problem.

One solution, which is a very interesting circuit, is shown in *Fig. 1.* In the left portion of this drawing the familiar diamond shaped representation of a Wheatstone Bridge may be seen. (The actual equipment has no resemblance to a diamond.) All four arms of the bridge have the same resistance. (About 3 ohms.) However, arms A and D are inductively wound, while arms B and C are pure resistances. A polar relay P replaces the usual galvanometer.

The plant leakage current flows through this bridge at all times. It enters the bridge at terminal 1 and divides into two equal parts. One part flows through arms A and C in series, the other through arms B and D in series. The two parts rejoin at terminal 3 and flow to the line lamp common, hence through the lamps to all of the lines in parallel.

While this current changes in value from time to time, these changes are very gradual and it may be considered a steady current. Inductance has no effect on a steady direct current; hence the bridge is normally in balance and no current flows through relay P.

When a receiver is removed from the hook anywhere in the plant, the leakage current is suddenly increased by about .05 amperes. Now, an inductance opposes any attempt to increase the current flowing through it. It does this by generating a counter electromotive force.

For our purpose this has the same effect as a momentary increase in the resistance of the inductance coil. Therefore arms A and D now have a higher resistance (apparently) than arms B and C, which unbalances the bridge.

The current now divides unevenly, the larger current flowing through B and C and the smaller through A and D. The difference between the two currents flows upward from terminal 4 to terminal 2 through relay P. This current is in the direction that will move the polarized armature of P upward and close its upper contact. This actuates the night alarm.

When the operator inserts a plug in a jack to answer a call the leakage current is suddenly reduced by about .05 amperes. When a steady current flowing through an inductance is suddenly reduced in value, the inductance tries to keep the current flowing at the former rate. It generates an electromotive force in the same direction as the current flow. The effect is the same as if the resistance of the coil were momentarily reduced.

The larger current now flows through arms A and D and a current equal to the difference between the two currents flows downward from terminal 2 to terminal 4 through relay P. This is the direction that moves the polarized armature downward making its lower contact. However, there is no wire connected to the lower contact, hence no further circuit action takes place.

Since relay P operates only momentarily, some means must be provided for converting this action into a continuous alarm. Operation of relay P in the upward direction closes a circuit from battery through the contact of relay P and primary winding of relay N to ground. This operates relay N.

When relay N operates, its No. 1 contact closes a circuit from battery through the back contact of relay R, No. 1 contact of relay N, and secondary winding of relay N to ground. This holds relay N in its operated position after relay P releases.

When relay N operates it also closes its No. 2 contact which closes the night bell circuit. The bell therefore rings as long as relay N is held operated.

We show a 20-cycle bell. This is the best arrangement if continuous ringing current is available. Otherwise a battery bell should be used.

This night alarm circuit does not provide for automatically stopping the bell when a call is answered. Any operator may stop the bell by pressing a button or operating a non-locking key on her key shelf.

Operating this key at any position places ground on lead R which operates relay R. Operation of relay R opens its back contact and thus opens the locking circuit of relay N allowing N to release. Release of relay N opens its No. 2 contact which stops the bell. The circuit is now ready for another call.

There is a key (not shown in the drawing) for turning off the night alarm when it is not required. There are several methods of doing this, but we believe that the best plan is to wire this key so that it will short-circuit the bridge between terminals 1 and 3.

We have found this circuit to be very reliable and satisfactory. There may be some objection to the additional manual operation required (operating the release key), however, the night alarm is used only during periods of very light traffic so we do not see how this objection can be very serious.

During an electrical storm relay P will be operated quite frequently by impulses from lightning flashes, causing the alarm bell to ring almost continuously so that it must be turned off.

However, regardless of the type of switchboard, a night operator does not attempt to sleep during an electrical storm. Many permanents will come in and she must distinguish between trouble and genuine calls before plugging out these lines.

After the storm is over, she should test all plugged out lines to see if they have cleared themselves (many of them do clear themselves), before she turns on the night alarm and goes back to bed.

The typical PBX board has its first 10, 15, or 20 lines wired for line relays. The board may be ordered with any number of line relays installed (up to the number for which wiring and mounting space has been provided), or the relays may be installed later. Otherwise, the PBX board does not have line relays and the line lamps are connected directly to the lines.

However, there will be practically no plant leakage if all of the extension stations are in the same building as the switchboard. The limited number

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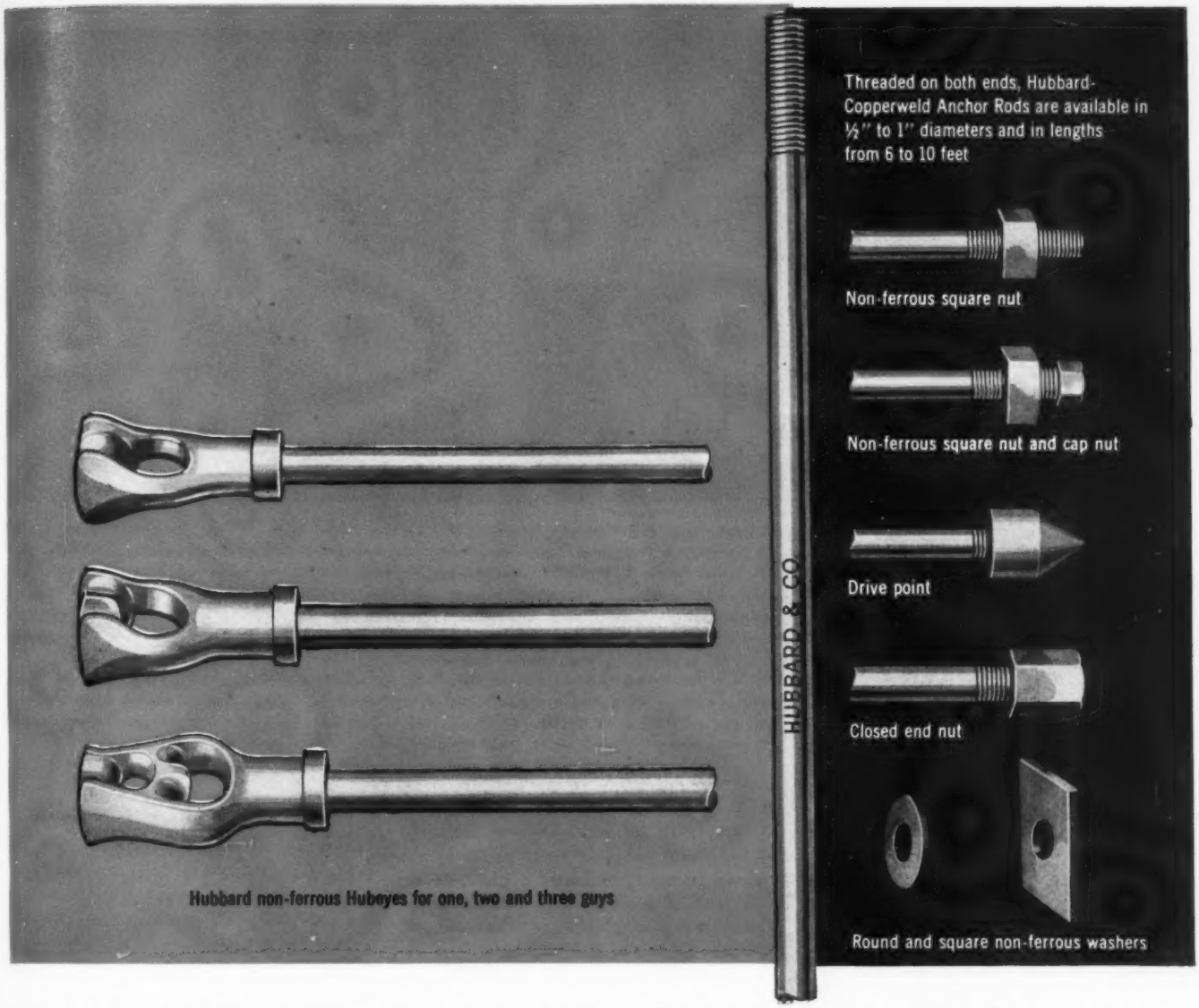
Hubbard non-ferrous Hubeyes for one, two and three guys
HUBBARD & CO.
Threaded on both ends, Hubbard-Copperweld Anchor Rods are available in ½" to 1" diameters and in lengths from 6 to 10 feet
Non-ferrous square nut
Non-ferrous square nut and cap nut
Drive point
Closed end nut
Round and square non-ferrous washers

Hubbard-Copperweld Anchor Rods last like copper... hold like steel

Corrosive soils and surface water, perpetual enemies of anchor rods, more than meet their match when they attack Hubbard-Copperweld Anchor Rods. The molten-welded copper exterior of the rod provides the permanence of copper to prevent rust and corrosion. The steel core assures a strong, dependable anchor for overhead lines.

Hubbard-Copperweld anchor rods and accessories are carried in stock and sold exclusively by leading electrical distributors everywhere. A phone call to your nearby Hubbard Distributors' storeroom will bring immediate deliveries to your warehouse.

When you specify Copperweld you get quality. When you specify Hubbard you will get extra quick service. You are sure of an ample stock of the right sizes and combinations for your job. Deliveries are fast . . . more than two hundred electrical distributors handle Hubbard Hardware. There's one near you.

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LIVE BETTER ELECTRICALLY

Complete Terminals for Over-the-Horizon System

Construction was completed in Florida City, Fla., on Aug. 12 on new "over-the-horizon" radio stations that will supplement existing deep-sea cables now used for telephone service between the United States and Cuba.

Operation of the system, scheduled to begin in September, would mark the first time facilities were made available for regular interconnection of Cuban and American television stations and the first time such a system was utilized for commercial TV.

The 185-mile link between this everglades town and Guanabo, Cuba, is a joint undertaking of the Long Lines Department of American Telephone & Telegraph Co., and the Radio Corp. of Cuba, a subsidiary of International Telephone & Telegraph Corp.

Technically known as "tropospheric scatter propagation," the method employed emits large amounts of microwave energy in the direction of the receiving antenna located at a point beyond the horizon. Enough of this energy is collected by the receiver to permit useful and reliable communication.

Long Lines said that testing of the system was to start immediately, and estimated it would take about one month to complete performance tests and alignment with the distant terminal.

When the system opens, it would be equipped to carry 36 simultaneous telephone conversations as well as one TV program in each direction.

At the present stage of development, the video picture is affected adversely for short intervals by atmospheric conditions. The system, however, is a major advance in the technique of transmitting TV between terminals separated by such a large body of water.

The system works this way: radio beams are focused much like the beam of a searchlight, from a 60-foot square transmitter antenna toward a receiving antenna located below the horizon. With the curvature of the earth blocking a direct path to the receiver, the signals travel outward in the layer of air surrounding the earth which is known as the troposphere. There are apparently sufficient irregularities in this air mass to cause some of the energy to be reflected or refracted downward.

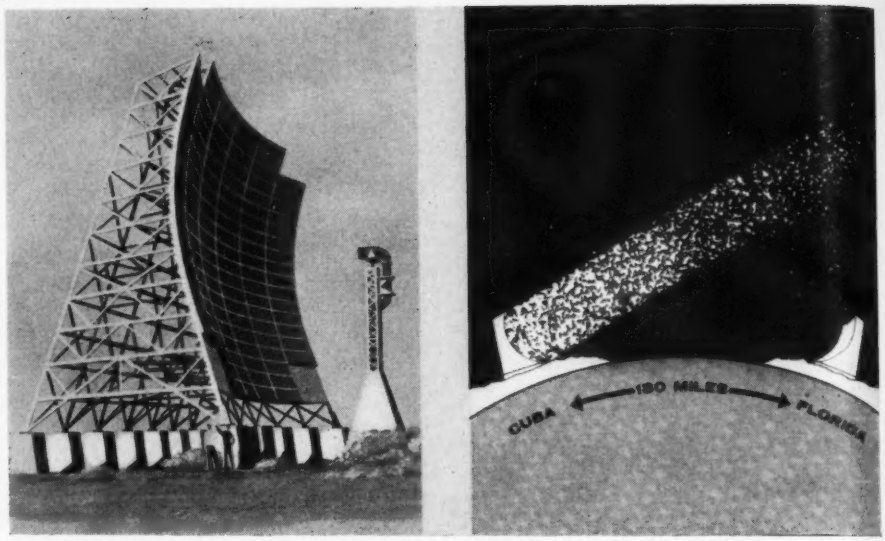
Only a minute portion of the microwave energy transmitted is received at the distant point, but this small amount is enough to make the system work.

"Over-the-horizon" systems are different from microwave radio relay systems now widely used in this country. With conventional microwave, "line of sight" transmission is used and signals are amplified at intermediate stations located about every 30 to 40 miles along a given route. "Line of sight" radio relay will be used at both terminals to interconnect with the communication networks of the U.S. and Cuba.

Construction of antennas and installation of feedhorns and terminal building equipment at Florida City were started in March of this year. The site was selected to provide as short a path as possible to Cuba and at the same time obtain a reasonable amount of protection from possible hurricane damage along the coast. Consideration was also given to avoiding any interference with existing or proposed UHF television systems in southern Florida.

The antennas resemble large outdoor movie-screens. They are heavy steel structures, covered with thin steel "skin-plate" reflectors. Horns centered 50 feet off the ground in front of the reflecting antennas feed the transmitted radio signals toward the plates, where they are focused in a beam aimed in the direction of the distant receiving antennas.

Picked up at the distant end, the procedure is reversed; that is, the radio signals are collected at the "skin-plates" and then focused into the feed horn. Terminal buildings contain both transmitting, receiving and amplifying equipment for this two-way system.



60-foot square reflectors located at Florida City, Fla. (left), and Guanabo, Cuba, are terminals for new 3-million-dollar over-the-horizon communication system that will soon beam telephone conversations and television between United States and Cuba. Resembling outdoor movie screens, reflectors will transmit and receive signals over 180 miles of water. Utilizing method of "tropospheric scatter propagation," reflectors will send radio waves to receiver situated beyond curvature of earth (right). Long Lines Department of American Telephone & Telegraph Co. which is building the system in the U.S., and International Telephone & Telegraph Corp. explain that radio signals travel outward layer of air known as troposphere, and are reflected to earth. High signal reliability and freedom from interference are attained although only minute part of signal is received.

U. S. Linked by Telephone With B. W. I. Island

Telephone service became available on Aug. 28 between the United States and the island Tortola in the British West Indies, according to an announcement by the Long Lines Department of American Telephone & Telegraph Co.

Calls to Tortola are routed through St. Thomas, in the Virgin Islands. The cost, exclusive of tax, of a three-minute conversation between New York and Tortola is $9.00.

Coast-to-Coast, Five Cents

You can do it, but it will take a little traveling. The next time you're in the Panama Canal Zone remember you can call from the Pacific to the Atlantic coast for one nickel.

Government Interference

"The great fallacy of government interference in economics—whether the government action is intended to be punitive or the opposite—is that by its very nature the action of a government can carry no promise of stability. Governments are in the hands of politicians and what a politician judges to be possible today may appear impossible to him tomorrow. And if he fails to bend and sway with the changes in public opinion, he will not long remain in office."—EDITORIAL STATEMENT, *The Wall Street Journal.*

Long distance

Our lines reach all the way back to 1897 . . . when early Independent telephone companies formed a national association to share ideas and experience . . . to keep pace with a fast-changing America. Today, 4,400 Independents own a $2.5 billion stake in America's future—serve more than nine million telephones throughout *two-thirds of the entire area of our nation.*

60 Years of Growing Service 1897-1957

September 8-14 is Independent Telephone Week in 11,000 U.S. communities.

INDEPENDENT TELEPHONE COMPANIES

helping you reach all America

U.S. Independent Telephone Association
Pennsylvania Building, Washington, D.C.

This 39th USITA national ad will appear in September 9 Time and September 20 U. S. News and World Report

RELIEVE YOUR GROWING PAINS

with General Cable Distribution Wire!

LOW-COST DISTRIBUTION WIRE

HELPS YOU EXPAND YOUR LINES

QUICKLY, EASILY AND ECONOMICALLY!

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If your company is operating in a rapidly expanding community, distribution wire provides a quick, economical way to extend open wire lines or cable plant.

Here are some of the money-saving advantages of this wire. On new construction, it can be attached directly to the pole. For increasing existing pole line capacity, it can be attached to the underside of a crossarm or directly to the pole. Staggered pair lays minimize crosstalk. Long cabling lays permit easy attachment of support wire to pole.

The steel support wire has a breaking strength of 1800 lbs. and both the support wire and copper conductors are polyethylene insulated. Each of the conductors is again protected by a jacket of fully color-coded polyvinyl chloride. This provides all-weather protection and quick identification. We stock various sizes of distribution wire plus the associated hardware in all our warehouses—to help you get your job done *fast!* For complete information, call your Automatic representative or your nearest A. E. Sales Corporation warehouse.

DISTRIBUTION WIRE

	URBAN	SUBURBAN	RURAL
Pair	16	6, 11, 16	1, 2, 3, 4, 5, 6, 11, 16
Size	24 AWG	22 AWG	19 AWG

Automatic's 5 friendly warehouses:

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Portland 10, Ore.
CApital 3-7244

Fran Batcher, Mgr.
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A member of the General Telephone System—One of America's great communications systems

GENERAL TELEPHONE SYSTEM

Courts and Commissions

General of Indiana Buys Brookville Independent

Announcement of the purchase of Brookville Telephone Co. by General Telephone Co. of Indiana, Inc., was made early in August, the Indiana Telephone Association *Bulletin* has reported.

New members of the board of directors elected are: P. E. Hoff, W. A. McCullour, L. H. Meyer, J. F. Van de Vusse, and G. A. Richwine. Mr. Meyer was elected president.

John Goodwin of Brookville, former president of the company, has been a member of the Indiana association's board of directors for a number of years.

The Brookville Telephone Co. was organized in April 1895.

Oregon Cooperative Secures Rate Raise

Additional gross annual revenues of $52,957.20 for the Pioneer Telephone Cooperative, Philomath, were authorized on Aug. 23 by Oregon Public Utility Commissioner Howard Morgan.

On its 1956 operations the Pioneer co-op experienced a deficit in net operating revenue of $40,292.89.

The commissioner stated in his findings, "On an estimated basis for the year 1957, as compared with 1956 adjusted figures, the proposed rates as filed would provide net income to applicant (Pioneer co-op) of $7,793.40 and bring about a rate of return of 2.74 per cent on its average net plant and working capital of $1,731,813.30"

Gulf States Given OK on Raises at Texas Exchange

The Stephenville (Tex.) City Council approved compromise rate increases amounting to 10.8 per cent for Gulf States Telephone Co. on Aug. 9. The company had asked raises of about 13 per cent.

The council action followed 14 months of negotiations.

The new rates will become effective April 1, 1958, or upon completion of the company's current $30,000 improvement program, whichever is the later.

Rates for one-party business telephones will be increased from $8.00 to $9.00; two-party business telephones from $7.50 to $7.75; one-party residence from $4.25 to $5.00; two-party from $3.75 to $4.00, with the four-party residence rate unchanged at $3.75.

Illinois Companies Seek Raises, OK to Finance

The Illinois Commerce Commission on Sept. 5 was to have heard a rate raise request from the Farmers Telephone Co. of Lee County, and on Sept. 4 a similar request from the Tamaroa Telephone Co.

On Sept. 4 the Eastern Illinois Telephone Co. was scheduled to present its application for authority to issue $262,000 additional first mortgage notes.

Bell of Canada Applies For Rate Relief

The Bell Telephone Co. of Canada on Aug. 16 filed with the Board of Transport Commissioners of Canada an application seeking approval to increase rates throughout Ontario and Quebec.

Increases in operating costs resulting in inadequate earnings were given as the reasons for the applications. The company states that to cover its expenses and earnings requirements its operating revenues must be increased by 24 million dollars for 1958.

Sets Miss. Rate Hearing

The Mississippi Public Service Commission on Aug. 24 set for September hearing the rate application of the Decatur Telephone Co. for a $3500 increase.

OKs Ohio Service Transfer

The General Telephone Co. of Ohio, The Commonwealth Telephone Co. of Ohio and The Citizens Telephone Co., Coolville, on Aug. 26 received approval from the Ohio Public Utilities Commission to serve a large territory in Meigs County, which territory was formerly served by various mutual telephone company exchanges.

Authorize Illinois Change of Ownership

Operation of the Shipman Telephone Co. was taken over by the Midland Telephone Co., Champaign, on Sept. 1, the sale having been approved by the Illinois Commerce Commission (TELEPHONY July 20, p. 41).

The Shipman exchange, which served about 260 subscribers, will be converted to automatic operation soon, it was reported.

Illinois Company Incorporated

Prairie Telephone Co. has secured a charter of incorporation from the Illinois secretary of state, it was reported on Aug. 24.

Common stock authorization was for 1,500 shares at a par value of $10. Incorporators are: Ancil T. LaFevers, James A. Stice and Glen F. Stice.

Asks to Waive Certain Connection Charges in Neb.

The Lincoln Telephone & Telegraph Co. asked the Nebraska Railway Commission on Aug. 21 for permission to waive service connection charges on residence extensions in the following circumstances:

When installed on the same premises at the same time as a residence main station or installed at the same time as a service connection charge is applicable to the move, change or installation of any item of equipment associated with the main station.

Also, if two or more residence extensions are installed at the same time on the same premises as a previously installed main station, the service connection charge would apply for one extension only.

The Lincoln company also asked the commission for authority to provide an optional exclusion feature to be used in connection with lamp and key equipment.

This feature provides for privacy in conversation and has been requested by a number of the company's customers. It may be provided at any one predetermined station and will exclude all

Announcing

SKILLMAN TYPE UNIVERSAL TRUNK RELAY CIRCUIT

Featuring plug-in mounting for integration on toll switchboards and intertoll switching. The trunk relay equipment may be moved to other locations strapped for other types of operation.

OPTIONS

The options listed below are available in each trunk relay circuit by external strapping of the jack.

Outgoing Calls

With operator ring control
Without operator ring control
Auto from intertoll
Pad switch

Incoming Calls

With operator ring control
Without operator ring control
Auto to intertoll selector

Construction

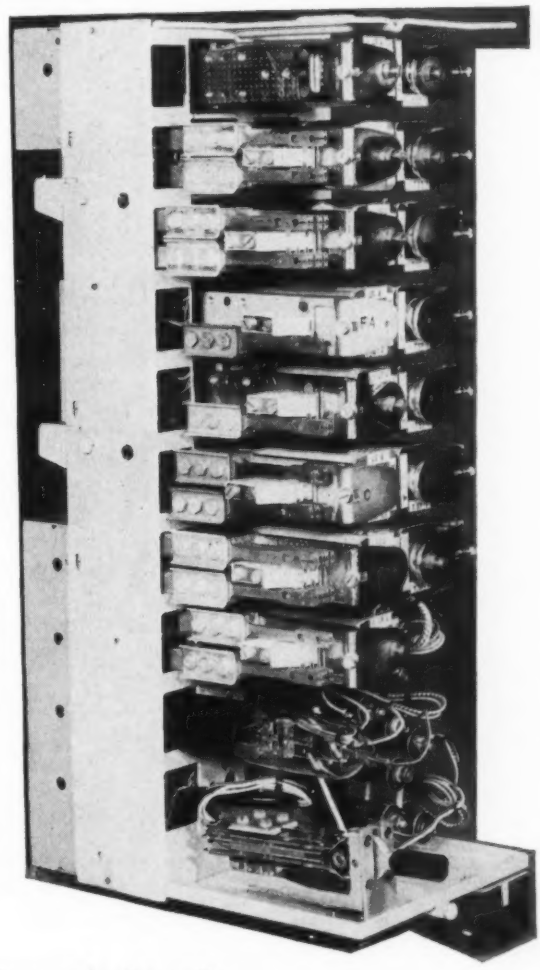
Plug-in using 32 point jacks

Mounting

Suitable for 19″ relay rack mounting or 4′6″ racks

Delivery

Few weeks from order.
Also available are relay sets for "E and M to loop," "E and M to simplex," "E and M to ringdown," etc.



For detailed specifications and price write

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other stations from a line in use. It is used by pressing a button on the telephone. Replacing the handpiece restores the station to normal operation.

Oregon Commissioner OKs Raise with 4.71% Return

Columbia Telephone Co. of Oregon, Corbett, on Aug. 29 was authorized to raise rates $2,437.80 annually.

The Oregon Public Utility Commissioner noted that, with the Corbett exchange converted to automatic operation, the company's "average rate base" had increased from $43,004.43 to $110,-422.32. Under the new rates, the company's rate of return is estimated to be 4.71 per cent. The old and new rates are:

Business:	*Old*	*New*
One-party	$5.00	$7.75
Two-party	4.50	6.50
Four-party	3.50	5.25
Multi-party	3.50	4.50
Residence:		
One-party	4.25	5.50
Two-party	3.75	4.15
Four-party	3.50	3.35
Multi-party	3.00	3.60

The commissioner also approved on Aug. 29 the establishment of extended area service between the Canby exchange and the proposed Needy exchange of Canby Telephone Association and the Woodburn-Hubbard exchange of the Pacific Telephone & Telegraph Co.

Passes Abandonment Bill

Governor Thomson on Aug. 16 signed into Wisconsin law a legislative bill to forbid the Wisconsin Public Service Commission from approving a request by an electric or telephone company to abandon a right-of-way without requiring the company to remove all poles at ground level and remove any other structures extending over three feet above the ground.

Three Ohio Rate Cases Set

The Ohio Public Utilities Commission is to hear the rate applications of the Western Reserve Telephone Co. and the Columbia Telephone Co. on Sept. 13 and that of the Lorain Telephone Co. on Sept. 25.

Seeks Loan OK in Missouri

Missouri Public Service Commission on Aug. 29 received the application of Seneca Telephone Co. for authority to borrow $40,000 from Stromberg-Carlson Co., a division of General Dynamics Corp.

N.C. Co-op Group Charges Territory Case Favoritism

Directors and officers of the Tar Heel Electric Membership Association, Inc., at a meeting at Raleigh, N. C., recently adopted a resolution charging the North Carolina Utilities Commission with favoring private utility companies over co-ops and with hindering rural telephone development in the state (TELEPHONY, March 16, p. 40).

The resolution is aimed at a recent commission order giving the Central Telephone Co. (North Carolina headquarters: Mount Airy) authority to serve a Randolph County community.

The co-op group contends that the order authorizes encroachment by the privately owned utility company into territory claimed exclusively by the Randolph Telephone Membership Corp. and that it was issued despite the fact that Superior Court Judge Richardson Preyer had reversed a similar commission order earlier.

Walter Fuller, attorney for the co-ops, said the second commission ruling probably will be appealed to the courts, also.

The resolution aimed at the commission said that it "has on numerous occasions failed to accord telephone membership recognition, consideration, and protection of the law comparable to that accorded to commercial telephone companies."

Taking note of the commission's recent order directing Central Telephone to serve Mrs. Daniel Staley in Randolph County and anyone else along the way to her house who desired service, the co-op group said the order "violates the spirit, if not the letter" of Judge Preyer's decision in the earlier case.

The commission originally ordered Central Telephone to serve seven petitioners in the Randolph area, but Judge Preyer reversed the decision, holding that the Randolph co-op was entitled to serve the area.

In the latest order, the commission instructed the company to serve the seven persons who petitioned the Commission about a year ago to order Central to provide them with service. The Randolph Telephone Membership Association serves the area in which Mrs. Staley and the seven earlier petitioners live.

The resolution charged that the commission has "materially retarded rural telephone development in North Carolina," accused the body of "apathy with respect to rural telephone development," and charged that it has taken "arbitrary and capricious action" against co-ops. It added that rural people regard the commission as a state agency which "protects the interests of the larger utility corporations" and called on the commission to "change its attitude of non-cooperation and hostility toward telephone membership corporations."

After the resolution was made public, Governor Luther Hodges of North Carolina, said he planned to arrange an early conference with representatives of rural telephone co-ops throughout the state in order "to get a whole picture" of the situation.

The governor indicated that members of the commission would not be invited and said he felt sure that "the two agencies" (the commission and the Tar Heel Electric Membership Association) "could iron out their differences."

Asked at a press conference what his general philosophy is regarding co-ops as opposed to privately-owned utilities, he said, "I think this country generally would favor having private companies build the utilities." He added, "However, I think there is a place for co-ops definitely. You need both—private and cooperative utilities."

Asks Financing OK in N. Y.

New York Public Service Commission on Sept. 5 was to have heard the request of the Ontario Telephone Co. for permission to issue stocks and bonds.

Would Buy Indiana Mutual

Indiana Bell Telephone Co. on Aug. 29 sought Indiana Public Service Commission authority to acquire and modernize the Paragon Mutual Telephone Co.

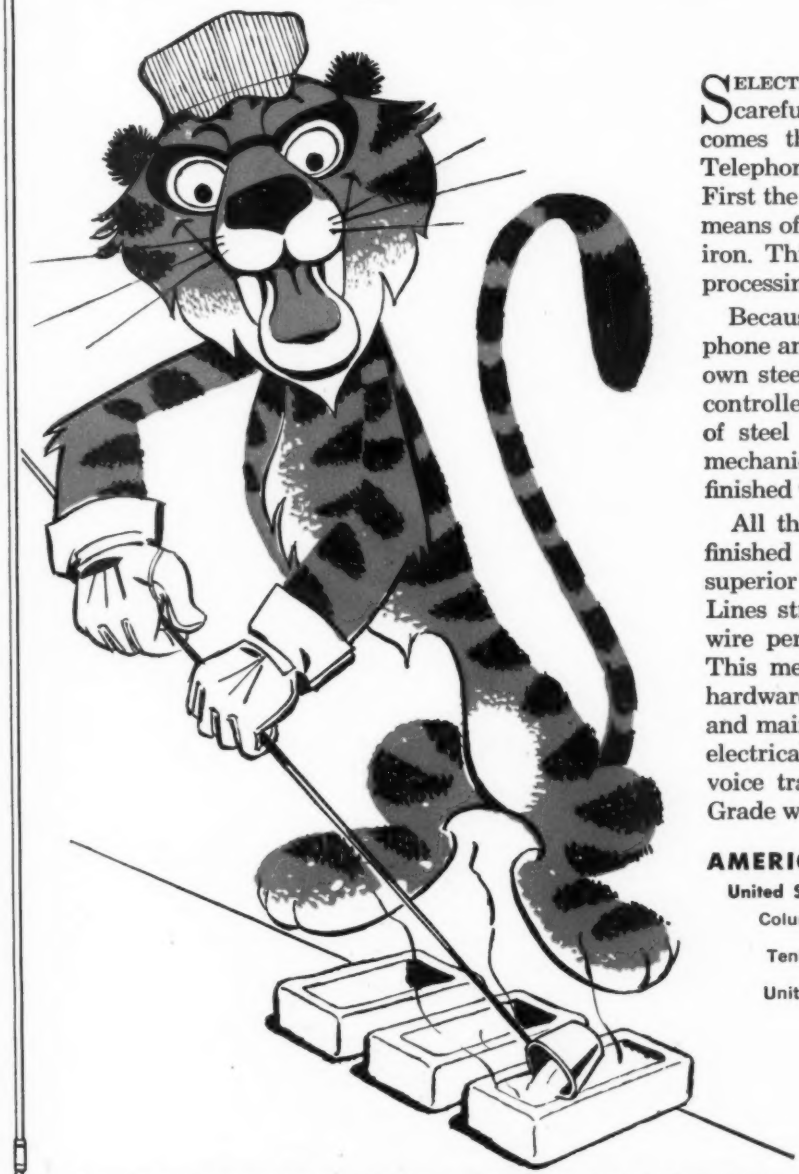
Watchfulness Always Needed

Of drivers in 1956 highway accidents, 96.7 per cent had more than one year's driving experience.

THE MAKING OF USS AMERTEL TELEPHONE WIRE

A story of Quality in four parts

PART II:
Making the Steel



SELECTED IRON ORE must go through various carefully controlled processes before it becomes the steel from which USS Amertel Telephone and Telegraph Wire is produced. First the iron ore must be reduced through the means of a blast furnace to the proper quality iron. This pig iron is then ready for further processing into steel.

Because the steel for USS Amertel Telephone and Telegraph Wire is produced in our own steelmaking plants, its quality is rigidly controlled at every step. Those characteristics of steel whith permit development of good mechanical and electrical properties in the finished wire are imparted at this stage.

All this care and attention pays off in the finished product, making USS Amertel a superior type telephone and telegraph wire. Lines strung with USS Amertel high tensile wire permit the use of longer span lengths. This means a considerable saving on poles, hardware, on digging time and on installation and maintenance costs. USS Amertel has low electrical resistance. And it has far better voice transmission characteristics than Steel Grade wire.

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USS

USS TIGER BRAND AMERTEL *Telephone & Telegraph Wire*

UNITED STATES STEEL

A Diamond Jubilee Salute...

1897-1957

60 Years of Independent Telephony

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Throughout the years, Remington Rand, a pioneer in the creation and development of efficient recordkeeping systems and office equipment, has worked hand in hand with the members of USITA.

We greet USITA on its Diamond Jubilee and look forward to working closely with its members in years to come. We feel confident that the next 60 years will be years of continued growth and prosperity for all.

Our systems experts, well versed in the operation of telephone companies, have constantly striven to perfect faster and better ways of doing business and of keeping records. We feel proud in knowing that our systems have helped many telephone companies give better and more economical service. Today automation opens new horizons in business management even to the smaller company.

The time-saving systems and products pictured on these pages are our contribution to the well-run, smooth-functioning telephone company of today. You are cordially invited to write for detailed information on any of them. Address Room 1976, 315 Fourth Avenue, New York 10.

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Maintenance Testing Equipment

By JOHN A. BRACKEN

CAPACITORS (condensers) are important components in the operation of a telephone, where for all practical purposes they provide a gap or break in an otherwise continuous part of the telephone circuit arrangement to prevent the flow of direct current.

Although a capacitor offers the resistance of its insulation to stop the passage of direct current, it is spoken of as being able to pass an alternating current through it. That is, while the alternating current does not actually flow through the capacitor in the true sense of the word, it does alternately charge and discharge the capacitor, thus having an effect as if the alternating current did flow through it.

Telephones are equipped with what are known as "fixed" capacitors.

By "fixed" we mean that the value of the capacitor's capacitance cannot be altered after it is assembled at the factory, due to the capacitor being permanently sealed in a metal container.

Fixed type capacitors are made in almost any size and shape to fit into any desired space, and for convenience in meeting certain capacitance requirements, several are packed into a single container.

Although capacitors used in telephones have no moving parts, they do at times develop troubles which interfere with signalling and proper transmission—such as:

(1) Open: Inasmuch as a capacitor does not pass direct current, electrically it is considered to be normally open; consequently, when a capacitor fails to function as intended, and is believed to be open, usually the trouble is due to a poor connection between one or perhaps both terminals and the metallic foil plates inside the capacitor case.

(2) Short circuit: The dielectric strength or insulating value of the material inserted between the capacitor plates may be destroyed by an EMF sufficiently great to rupture the insulating material at some point; that is, if lightning or other source of high EMF should happen to enter the capacitor, the insulating material will be pierced at the weak point. As a result, heating occurs and the temperature rises to a point of ignition whereby the insulating material becomes charred, thus causing a short circuit between the capacitor plates.

PART 81. The preceding article in this series apperaed in the August 17 issue, page 29.

The simplest method for detecting either an open or short-circuited capacitor is to localize the trouble by a procedure of elimination, using an ohmmeter as follows:

Test for an open: Connect one ohmmeter test lead to one of the capacitor terminals, and the other test lead to the capacitor's other terminal.

Current from the ohmmeter test battery will flow into the capacitor and in so doing cause a deflection of the meter needle.

If no readily discernible deflection of the ohmmeter needle is observed, alternately transpose the meter test leads at the capacitor's terminals several times; then, if no deflection of the meter needle is obtained, it is indicative of an open in the capacitor.

However, should the meter needle deflect each time the meter test leads are transposed, it is an indication that the capacitor is OK.

Note: If the ohmmeter is equipped with a "REV" key, by using it instead of transposing the meter test leads, the same effect may be obtained. That is, simply connect the meter test leads to the capacitor terminals and then operate and release the "REV" key several times.

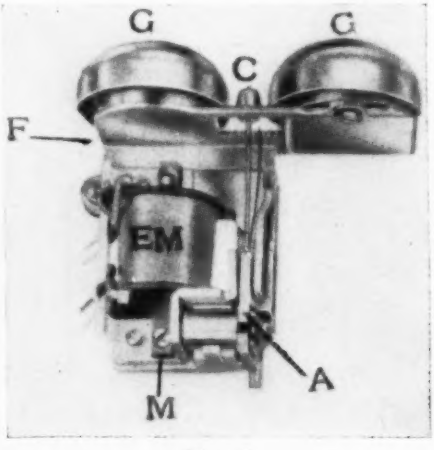

Fig. 1

Short circuit test: Follow the procedure given for locating an open, with the exception that it will not be necessary to transpose the meter leads or operate the "REV" key.

Inasmuch as a perfect short circuit should measure zero ohms on the ohmmeter, it is advisable first to set the meter range at its lowest value.

If a zero reading is not obtained, or the meter does not register at all, then a range of higher value should be used, because the fault may be due to what is known as a "high resistance short," which of course would not be indicated by the ohmmeter low range setting.

Generally, two capacitors are placed in a telephone. One 2-mf capacitor, called the talking capacitor, is connected in series with the induction coil secondary winding, and the other, a 0.5-mf called the ringing capacitor, is placed in series with the telephone bell.

Technically, this bell is known as a ringer, and may be unbiased, biased, or the harmonic type, depending upon the kind of central office equipment with which the ringer is associated, and whether or not the ringing system involved is non-selective, semi-selective or full selective.

The telephone ringer is an electromagnetically operated device, an example of which is illustrated in *Fig. 1*, consisting of a metal frame "F," a combination of a permanent steel magnet "M," and an electromagnet "EM," two gongs, each designated "G," an armature "A," to which is attached a clapper rod and clapper "C," so designed that when the armature is caused to vibrate by incoming ringing current, the clapper alternately strikes each gong, thus producing the ring intended to attract the customer's attention to the telephone.

Since the ringer consists of an electromagnetically operated mechanism, in common with other similar devices, it

(Please turn to page 47)

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Copperweld LINE WIRE

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Also
Right for Carrier
— a Copperweld
Bonus Value!

When Copperweld* Line Wire goes up, it's up to stay. Non-rusting Copperweld has the permanent high strength to resist even the worst weather conditions year after year. Thus, you get longer service life—lower operating costs. At the same time, you get better talking qualities, because Copperweld has the best electrical conductance of any long-span conductor. What more could you ask for in a line wire?

*Trade Mark

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- **Profitable noise**
- **Lead in reserve**
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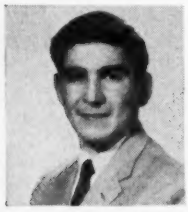


by Frank R. Kasper, Inside Sales—Atlanta

At our house, we have a dynamo of atomic automation—she's just under 2 years old and keeping up with her is a big job—but fun. It's just the same keeping up with your needs for supplies: big job—but fun. It's satisfying work to know the parts and equipment I send you—are finest in the world. Why am I so sure they're best? Because they come to you with a double guarantee—the maker's . . . and Stromberg-Carlson's. And along with the protection you get from Stromberg-Carlson's 62-year reputation—you get the promise of new and better telephone equipment from the research program your orders help support. Thanks for the mighty fine business you've given us—we sincerely appreciate it!

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory!

Reserve lead keeps battery young

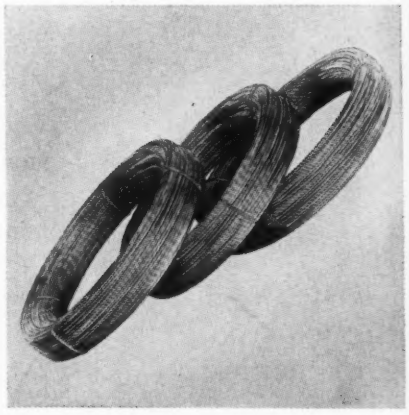
Inside the unique lead buttons in an Exide-Manchex positive plate there's a coil of reserve lead designed to prolong battery life. Over the years, as this lead is needed, it goes into action, instantly and automatically.

The unique thing about Exide-Manchex construction is that the reserve lead does not have to support the plate. The spiral lead buttons are tightly locked into a cast lead-antimony alloy grid several times more rigid than pure lead. Hence the reserve lead can be completely consumed while the plate retains its strength.

Only Exide-Manchex Batteries have this construction. In addition, they feature a plastic jar that saves weight and space, high level electrolyte for less frequent filling, and huge bottom reservoir that virtually insures against sediment shorts.

Save 10-15 poles per mile

A net saving of 10 to 15 or more pole structures per mile is possible where **Crapo** High-Tensile Telephone Line Wire is used in long-span construction. Fewer pole structures mean substantial savings in time, labor and material, and in maintenance.



Crapo HTL-135 makes possible spans of 350 feet in heavy, 450 feet in medium, and 500 feet in light loading areas. Its practical economy should be considered for new extensions and where old lines are to be replaced.

Crapo HTL-85 (No. 12 B. W. G.) permits spans of 225 feet in heavy, 325 feet in medium, and 375 feet in light loading districts; provides stronger spans on existing pole structures. Both wires possess superior telephonic transmission qualities.

For rough service

You get protection plus with Cook Electric Company's type RO-9u single-circuit substation protector.

It is equipped with an H-20 protector unit mounted on a heavy-gauge formed steel bracket with weathertight grommets and a locking device for the hood.

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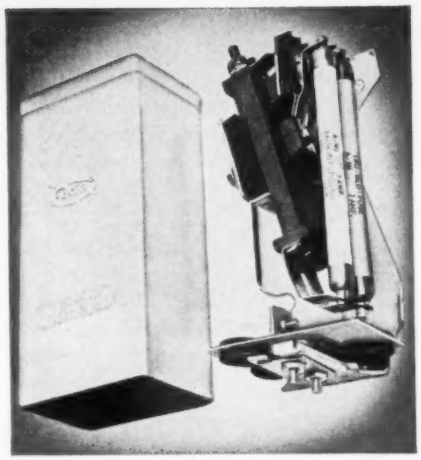

The best available protector for single-circuit substations.

The rugged construction of the housing provides unusual durability. The high quality of the H-20 protector makes the RO-9u the best unit you can buy if you want high resistance to rough handling, abuse and damage from severe electrical discharges.

Puts up a howl, gets misplaced receivers back on the hook

Here's how to tell a subscriber to replace his receiver on the hook—without wasteful service calls.

Lorain Model B Howler makes itself heard!

This Model B Howler, made by Lorain Products Corporation, keeps party lines clear. It produces a distinctive signal tone that demands instant attention. The signal is loud, but safe.

The Lorain Model B Howler is equipped with subscriber-controlled relay for fully automatic operation.

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is subject to the development of operating troubles classified as:

(1) *Magnetic:* (a) Weak permanent magnet. (b) Polarized electromagnet core or armature. Trouble of this nature affects the proper movement of the armature, and may be detected by removing the ringer permanent magnet and checking the electromagnet core and armature for evidence of being magnetized.

(2) *Electrical:* (a) Improper connections. (b) Loose connections. (c) Open electromagnet winding. (d) Short circuit. An open or short circuit may be located by means of an ohmmeter.

(3) *Mechanical:* (a) Manufacturing defects. (b) Loose, broken or worn parts. (c) Biasing spring too loose or too tight. (d) Clapper rod bent. (e) Gongs too close to clapper. (f) Movable parts out of adjustment.

Although ringers are adjusted at the factory to certain specified requirements, if and when adjustments are necessary in the field, in order to provide for variations in the central office ringing power or other factors affecting the ringer's operation, tolerance in the specified adjustment requirements usually is permitted—that is, an allowable adjustment variation above or below a given value expressed as a percentage tolerance.

For example, suppose the specified armature travel (clearance between armature and electromagnet core) is 0.016 inch, a change of plus or minus 5 per cent above or below this value might be tolerated.

(4) *Sound:* Bell too loud, or not loud enough. According to physiological science, this is essentially a psychological factor as related to the response of the average human ear to the stimulus of a given sound intensity.

However, if and when a customer reports trouble relative to the sound of the telephone bell, the ring should be adjusted to his satisfaction. In this respect, some telephones are equipped with a mechanism so constructed as to allow the customer a generous leeway in regulating the sound output of his telephone bell to suit himself.

This mechanism is located directly below the ringer, and is operated by a device shaped somewhat like the half of a wheel protruding through the bottom of the telephone set where it is accessible and easy to operate.

When operated, the device varies the position of one of the ringer gongs with respect to the clapper, thereby changing the bell sound output to the desired loudness.

(To Be Continued)

H. T. McCaig, Lorain Products Sales Head, Dies

HAROLD T. MCCAIG, 74, sales manager of Lorain Products Corp. and former Chicago branch manager of Stromberg-Carlson Co., died on Sept. 1 in his home in Berwyn, Ill., following a prolonged illness.

Mr. McCaig, who started his telephone career in 1902, spent a number

H. T. McCAIG

of years with the old Nebraska Telephone Co., later a division of the Northwestern Bell Telephone Co. He then entered the Independent telephone field, becoming a member of the sales staff of Stromberg-Carlson. For many years he was Chicago division manager for Stromberg-Carlson.

Following his retirement from Stromberg-Carlson on Jan. 1, 1949, he joined the Lorain Products Corp. as a special representative. In February 1953 he was made sales manager for Lorain Products Corp.

Mr. McCaig was a life member of the Independent Telephone Pioneer Association and a member of Telephone Pioneers of America.

Survivors include his wife, Helen; a son, Harold Jr.; a daughter, Mrs. Judith E. Schmidt, and a sister.

Investor's Important Role

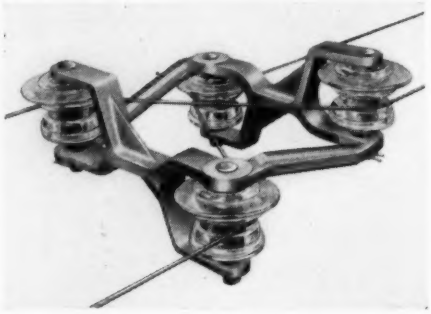
"One of the most important roles of steel's tomorrow will be played by the investor. His understanding of the need for reinvestment of profits and his personal action as a citizen in helping to maintain an economic climate which will lend incentive to further investment, may well be a controlling factor in determining the ability of the steel industry to keep pace with America's expanding needs."—ROGER M. BLOUGH, *chairman of the board, United States Steel Corp.*

XUM

News on New Products

TRANSPOSITION BRACKETS—Case aluminum span-point brackets are the only brackets available which allow a mid-span transposition of communication wires, at any point of the line *between poles*, regardless of pole spacing, according to the manufacturer, Transandean Associates, Inc.

Especially adapted for carrier circuit construction, this lightweight design



eliminates the need for special transposition poles, the company states. The Case span-point bracket weighs only 3½ pounds, complete with insulators and bushings. The brackets are noncorrosive and feature insulators that roll, thus protecting wire insulation in stringing and reducing installation time.

All Case brackets come equipped with a special rubber bushing. In the event of glass insulator breakage, the line wire falls on the rubber bushing, with no loss of communication service and eliminating costly emergency replacement, the company points out.

Case "high-strength" span-point brackets are also available and are designed for use in long spans and at river crossings where steel strand, heavy galvanized wire, copperweld single or braided wire is used at high tensions. Request NP730.

•

ELECTRIC SOLDERING IRON — American Electrical Heater Co. is producing a new transformer type electric soldering iron—the American Beauty T-30 Super-Hot—especially designed for high speed, heavy duty, fine precision production soldering.

The T-30 Super-Hot is of simple streamlined construction with a changeable tip of Armco ingot iron, brazed to a stainless steel tubular casing. Tips are available with either diamond or chisel point and heat loss is reduced to the minimum by enclosing the entire element in the tip. The slender, superhot tip is designed to enable the user to easily reach small, otherwise inaccessible work, the company states.

The transformer — adequately ventilated—available in either 110 or 220 volts, heats the tip to solder-melting temperature in 30 seconds. Within an-

other 60 seconds the tip becomes red hot. With a tip-element of 30 watts input it remains red hot for hours of production work.

The pencil-type handle is of a specially developed high-impact red plastic that remains cool at all times. A 7-foot rubber-covered cord resists heat and moisture and gives ample length and flexibility. Request NP731.

MAGNET WIRE — Anatherm — the first polyester film-coated magnet wire to be offered under the new Class F (155-degree Centigrade) rating established by the AIEE—has been developed and marketed by the Anaconda Wire & Cable Co.

The new product supplements Anaconda's line of Class B EPOXY enamel magnet wire. Anatherm's high level of thermal stability makes it especially valuable to manufacturers of electronic equipment.

Anatherm was designed to give greater thermal and chemical stability, excellent abrasion resistance and dielectric strength.

Anatherm, produced by Anaconda's Muskegon, Mich., mill, is available in single and heavy film thickness in AWG sizes from 15 through 25. It is anticipated that the size range soon will be expanded, officials stated. Request NP732.

•

ELECTRIC TYPEWRITER — A new electric typewriter that proportionally spaces each letter of the alphabet according to its width—said to be the only machine of its kind yet developed that retains both the operating ease and mechanical reliability of conventional typewriters — has just been announced by Remington Rand.

The Statesman is available in a choice of eight newly created type styles, and there are many colored ribbons available to harmonize with color letterheads.

Business correspondence, copy for offset printing, and other routine typing assignments can now be produced in printwork that allows each character its proper amount of space. An "i", for instance, will occupy less space than an "o", and an "n" less than an "m",

(Please turn to page 52)

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Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP730_____; NP731_____; NP732_____; NP733_____;
NP734_____; NP735_____; NP736_____; NP737_____.

Name.....Title.....

Company.....

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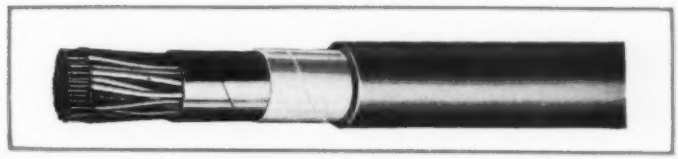
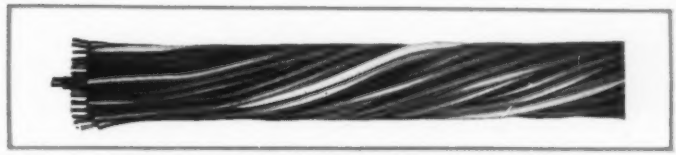
TELEPHONE WIRE & CABLE for all needs...

Aerial and Duct are R. E. A. listed. Both Aerial and Duct and Direct Burial Cable utilize polyethylene insulation, aluminum shield and high molecular weight polyethylene jacket for top electrical values. Available in #26, #24, #22, or #19 AWG in 6 through 404 pairs.



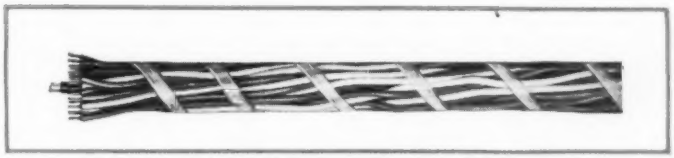
EXCHANGE AREA CABLE

Conductors insulated with high molecular weight polyethylene and jacketed with color coded, weather resistant vinyl provide good transmission values at low cost. Available in either #19 or #22 AWG with 3, 6, 11, or 16 pairs cabled over a high molecular weight polyethylene insulated high strength galvanized support wire.



RURAL DISTRIBUTION WIRE

The rugged weather resistant vinyl insulation over the conductors is fully color coded. This construction, designed for block distribution, serves best where low cost rather than low attenuation is the prime consideration. Available in #24 AWG with 6, 11, or 16 pairs.



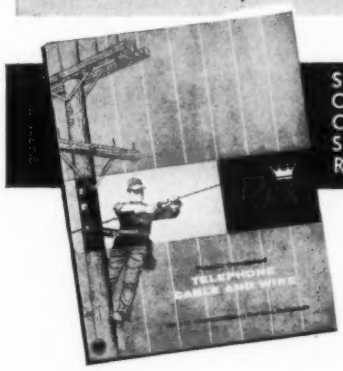
URBAN DISTRIBUTION WIRE

A high molecular weight, weather resistant polyethylene extrusion encompasses the parallel conductors. A raised ridge tracer provides polarity identification. The high strength conductors make possible long spans on lateral branches or drop runs. Available in #14 or #12 Copperweld or .083 galvanized steel.

ONE PAIR DISTRIBUTION WIRE

Solid, soft drawn bare copper conductors fully color coded with heat resistant polyvinylchloride insulation. All pairs twisted with varying lays to minimize cross talk and cabled to insure maximum flexibility. A tough, water resistant vinyl jacket in either brown or ivory provides good conductor protection for exposed insulation. Rip cord construction prevents damage to conductors in stripping. Available in #24 AWG with 6, 12, 16, 21, 26, 51 or 76 pairs.

INSIDE WIRING CABLE



SEND TODAY FOR THIS CATALOG — CONTAINS COMPLETE DATA AND SPECIFICATIONS FOR ALL REX WIRES AND CABLES.

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★ **GREER GARSON**
in "Revenge" (September 10)

★ **GEORGE TOBIAS**
in "Here Lies Francois Gold" (September 17)

"Telephone Time" opens

An exciting array of stars and new shows will highlight "Telephone Time" this fall! Week after week, top Hollywood artists will add extra entertainment value to these dramatic true stories:

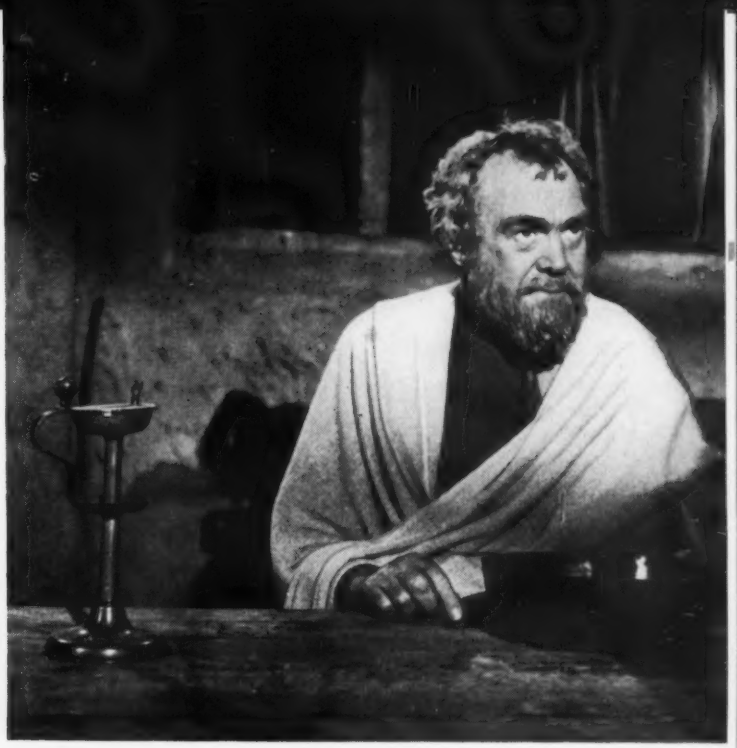
SEPTEMBER 10—Greer Garson stars in "Revenge" . . . how a determined woman changed the history of her times.

SEPTEMBER 17—George Tobias stars in "Here Lies Francois Gold" . . . the amusing story of a French underworld character who was patriotic in spite of himself.

SEPTEMBER 24—Anne Jeffreys and Bob Sterling star in "Campaign for Marriage" . . . about a real life couple who began on opposite sides of a political campaign and wound up together before the altar.

OCTOBER 1—Thomas Mitchell stars in "The Gadfly" . . . a stirring dramatization of the last days of Socrates.

ANNE JEFFREYS and BOB STERLING
in "Campaign for Marriage" (September 24)



THOMAS MITCHELL
in "The Gadfly" (October 1)

big new star-studded season

DR. FRANK BAXTER
the distinguished television personality, will become "Telephone Time's" new host on September 10

On September 3 one of the most outstanding shows in the "Telephone Time" series will be seen again—Bette Davis starring in the memorable drama, "Stranded."

Here's superb television enjoyment for your family and millions of others—and commercials that are contributing to the sales efforts of the whole telephone industry.

So don't miss "Telephone Time" on ABC-TV, Tuesday evenings!

Working together to bring people together
BELL TELEPHONE SYSTEM

XUM

just as they do in regular printing, yet the new machine has been made as easy to operate and to maintain as an ordinary one-space typewriter.

For the typist, the Statesman's major improvement is the way it solves the problem of backspacing to correct mistyped characters. Instead of having to

count each character back to the point of error the typist can now use two of the Statesman's exclusive features—a position locator and repeating backspacer—to make it a wholly automatic job.

The Statesman's space bar is divided into two units, a two-increment bar and a three-increment bar, both of which automatically repeat if held down. In jobs requiring an even right-hand margin, such as in the preparation of copy for offset printing, the typist can use both space bars in combination to justify her lines.

Another feature of the new machine is that, when the typist reaches the right-hand margin, a bell sounds but the carriage remains free until the end of the writing line. Then the keyboard automatically locks, to eliminate the possibility of strikeovers.

The Statesman has a left-hand margin release that lets the carriage go all the way home to the limit of the writing line if necessary, and its tab stops have been built to prevent any rebound from the stop position, regardless of how far the carriage must travel.

Fingertip margin control permits margins to be established without moving the carriage, and the new machine also has the exclusive paper positioning scale that makes centering automatic and does away with time-consuming "margin mathematics."

Dual-Rite, another exclusive development that enables the typist to quickly switch to bold-face for emphasizing key words or sentences within the body of any typewritten manuscript, is also available as an optional feature on the new machine.

All controls on the Statesman are visible, with the power switch in plain view to guard against leaving the power on. Its naturally sloped keyboard insures maximum typing speed and makes it easy for typist to switch back and forth between the Statesman and standard machines.

The Statesman comes in seven attractive colors: White Sand, Mist Green, Desert Sage, Honey Beige, Limelight, French Gray and Midnite Blue. Request NP 733.

•

EXTENSION CORD REELS — Two portable cable reels featuring wide adaptability have been developed by the makers of Hykon wiring equipment. The Models NL-15 and NL-18 reels have no current collector, sliding brushes or spring contacts, and will handle any size wire or cable.

The reels eliminate the need for specially-built reels to coil each individual wire size. Adjustable steel pins can be inserted to fit desired coil diameter, with the lock-bearing adjustable to any coil-width. Loading requires only pulling one end of cord through an opening in the removable side plate and coiling the cord on inside and outside of the reel, ready for instant use. All-welded steel construction is used throughout for rugged industrial and commercial service.

Model NL-15 measures 15 inches in diameter, handles 150 feet 12/2 cord; Model NL-18, 18 inch diameter, 250 feet 12/2 cord. Capacity for other cord sizes varies accordingly. The units weigh 16 and 19 pounds respectively. Request NP 734.

•

TREE WIRE—Newly developed Tuffcote—a tough, abrasion-resistant tree wire for rugged service in tree growth areas spanned by telephone transmission lines, is now being produced by National Electric Products Corp.

The new tree wire is already being installed by some Bell companies to overcome operational problems encountered with conventional wire used in tree service.

Tuffcote is made of either galva-

nized steel or Copperweld with a special protective covering. The tough, all-weather insulation is applied on the telephone company's own wire or available on wire specified by the client and furnished by National Electric.

Desirable properties of Tuffcote's insulation include: Extreme abrasion resistance, all-weather durability, intrinsic toughness and high dielectric strength.

Specifically, Tuffcote replaces bare wire and "low insulation" installations which create distortion in telephone circuits when tree branches rub against the lines—especially in wet or windy weather. Life potential of National Electric's new wire is 15 years, the company states.

Shipments of Tuffcote are forwarded to designated operational areas on National Electric's 24-inch expendable reels. Request NP 735.

•

RADIO FREQUENCY DUPLEXER—The Budelman Radio Corp. has announced the production of its Type 149 Radio Frequency Duplexer which is a tuned cavity network designed to provide for coupling a transmitter and receiver operating in the 450 or 900-megacycle bands to the same antenna and transmission line without interaction and with negligible loss in efficiency.

By the use of the Type 149 R-F Duplexer, one antenna and transmission line are eliminated resulting in a very substantial cost reduction, particularly in cases where large antennas or long transmission lines are used.

A further saving is effected by the reduced weight of a single antenna installation which permits the use of a lighter low-cost antenna support tower.

Due to the high R-F selectivity of this Duplexer, it has the further advantage of reducing the spurious radiation of the transmitter by at least 20 db and the spurious responses of the receiver by at least 40 db, according to the company. Special arrangements of the Duplexer may also be used to connect two or more transmitters (or two or more receivers) to the same transmission line.

The Duplexer is assembled on a 3½

(Please turn to page 57)

PREPARE FOR

DISTANT DIALING

WITH

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COMPUTER INTERCEPT

DIGIT ABSORBER FOR 2-5 NUMBERING

CODE TO SELECTIVE RINGING CONVERTER

DIGIT REGISTER FOR TRUNKS

APPLIED TO YOUR PRESENT EQUIPMENT

ONLY STANDARD TELEPHONE COMPONENTS ARE USED IN
SIMPLE STRAIGHTFORWARD METHODS OF OPERATION

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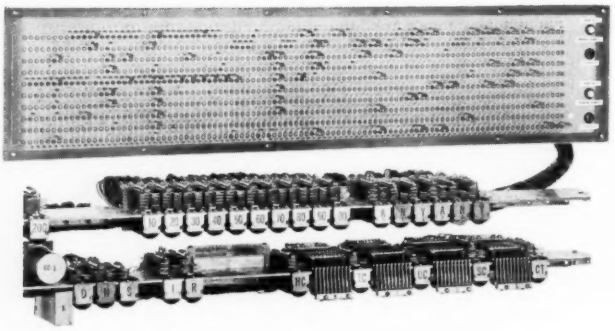
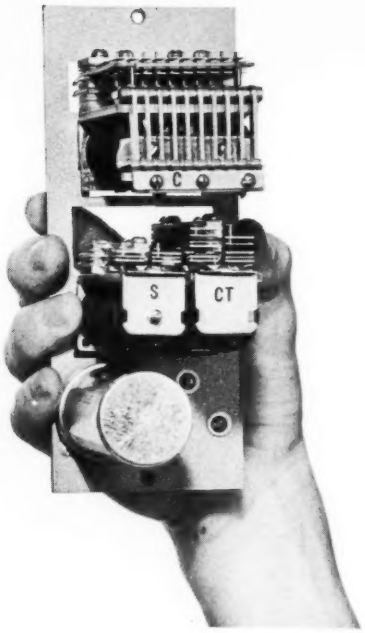
- Sectional view of Computer Intercept unit
- For 100 line TPL or 1000 station TPS installation
- Increase your Schedule "A" commissions.
- Increase available trunk usage time.
- Save time and material on intercept service.





Photograph illustrates relative size of unit assembly of Digit Absorber, Ringing Converter or Digit Register.

COMPUTER INTERCEPT

Advanced technique of printed circuitry is used in this equipment to provide 100% intercept for TPL or TPS dial switching units.

The equipment is compatible with all makes of dial switchboards and can be installed anywhere in the dialing train.

Unit will handle 4 or more digits or combinations of mixed digits, and will operate with recorded announcer sets or operator positions.

DIGIT ABSORBER

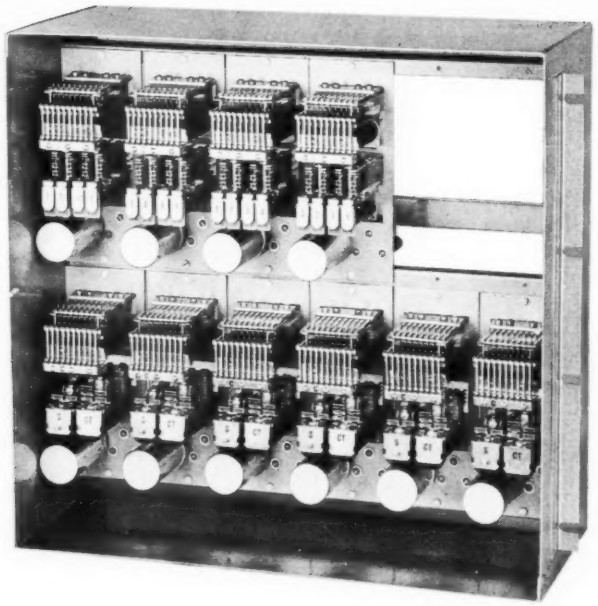
Use Universal Digit Absorbers for Universal Numbering Plans.

Units can be added to any existing dial switchboard to pad in three digits of exchange code (ABX) or four digits in the case of a small three digit dial unit.

Units are compact, fully wired, and factory tested.

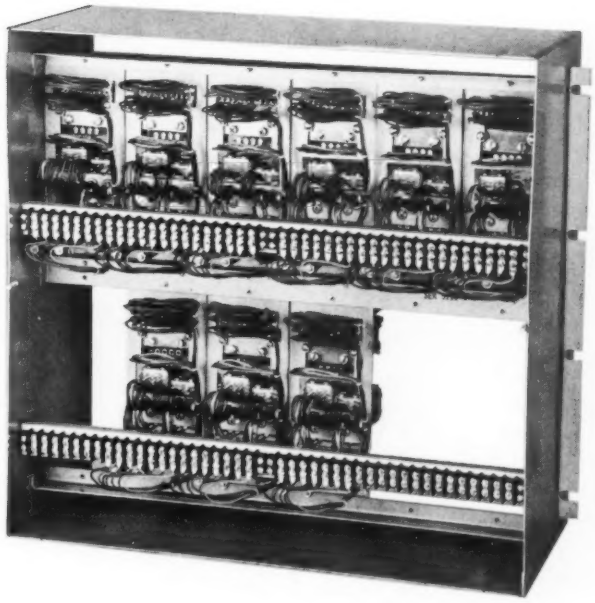
- Satisfies all 2L-5D code combinations.
- Easily installed.

UNIVERSAL CONTROLS CORPORATION



Front and rear view of typical relay case for Digit Absorber, Ringing Converter and Digit Register for mounting on standard 19" rack.

- Increase link hunting time interval.
- Eliminate partial registration of dial pulses.
- Allow maximum use of links for local calls or toll connections.



RINGING CONVERTER

Meet the demands of modern party line operation.

Unique application of impulse counter permits conversion of code ringing dial switchboards to full selective frequency ringing or semi-selective superimposed battery ringing.

- Increase your revenue per line.
- Improve your customer relations.
- Increase party line fill.

DIGIT REGISTER

Universal Digit Registers for Trunks insure positive supervision on dialed toll calls to tributary dial exchanges.

This equipment can be advantageously applied to "Trunk on Line" dial units where 5 or more digits are required to be delivered to a 3 or a 4 digit link in a tributary exchange.

Apparatus returns supervisory signals of Ringback Tone or All Link Busy Condition.

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RIverside 7-5191

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Please furnish additional information on equipment checked for use on dial

unit of_____ Manufacture_____ type

_____ lines_____ toll trunks_____ exchange code.

- ▷ COMPUTER INTERCEPT
- ▷ DIGIT ABSORBER
- ▷ RINGING CONVERTER
- ▷ DIGIT REGISTER

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inch x 19 inch panel to fit a standard relay rack and is normally mounted on the same rack as the radio equipment.

All tuning adjustments are made at the factory in accordance with specified frequencies and locked to prevent movement in shipment or under vibration. Request NP 736.

•

RELAY TESTER—The new Model 4501 relay test set, announced by Sigma Instruments Co., permits five separate testing and adjustment measurements

to be made on high speed polar relays of the type commonly used in pulse equipment, such as computers and teletypewriters.

Typical relays in this group include Sigma Series 72 and 7, Western Electric 215 and 255, Western Union 202 and 203, and the foreign-made Carpenter and Siemens & Halske. Request NP 737.

Helpful Literature

CARRIER TELEPHONE EQUIPMENT—T. S. Skillman & Co., Pty. Limited has issued a brochure describing the general details and construction features of its carrier telephone equipment.

The Skillman company produces a complete range of carrier systems which conform "in performance to the latest recommendations of the C. C. I."

•

The Skillman company also has released a booklet on its 1+6 channel system type S36. Among the features listed for the type S36 are:

(1) Suitable either for VF Cable or open wire operation.

(2) Providing six channels 300-3400 c/s and allowing normal use of the physical circuit.

(3) In-built channel edge signaling providing ringing or fully automatic dialing facilities.

(4) All equipment is fully tropicalized. Special tropic-proof cabinets can also be provided where climatic conditions warrant their use.

Request HL361.

•

WIRE ROPE — A four-page folder, Bulletin DH-91, describing its Signalkore wire rope, has been issued by the Wire Rope Divisions of the American Chain & Cable Co., Inc.

According to the manufacturer, this new wire rope not only transmits force, but it also transmits electrical energy for faster, safer and more economical carrying of continuous communication instructions. This was made possible by development of a practical method by which copper wire conductors are imbedded in a fiber center, which is then "laid-up" in a regular steel wire rope.

Advantages, construction details, diameters, weights, maximum lengths, breaking strengths and other general information of interest to engineers and management officials are contained in the bulletin. Request HL362.

•

OFFICE EQUIPMENT — The tools and new techniques that assist the "first lady of business," the American secretary, and help her do a better job are described in a new booklet recently published by Remington Rand Division of Sperry Rand Corp. The sixteen-page illustrated brochure is entitled, "Secrets of Secretarial Success."

The booklet explains how a properly organized filing system can enable the secretary to save many lost hours. For example, with Variadex, filing alphabetically with color, filing and finding time is cut as much as 80 per cent. Once the color key is mastered you find only exactly what you are looking for—bypassing all unrelated material, the booklet points out.

Other filing systems discussed include: Soundex, filing by sound; Subject File, filing by subject; and Terminal Digit, filing by numbers.

In addition, a number of filing cabinets are discussed. With Kompakt files you get that "*extra drawer*" in the same amount of floor space. You have four drawers in place of three, five in place of four and six in place of five.

Others mentioned include: Convé-Filer, enabling you to find the right card with push-button speed; Kard-Veyer, also a push-button file; and Kardex, celebrating its 50th anniversary of visible record keeping with the new Aristocrat model.

The "first lady of business" will be interested in features of "What Makes a Good Secretary?" The booklet also contains a list of rules in progressive filing. Request HL363.

•

CHLOROTHENE BOOKLET—A new booklet outlining properties and uses of Chlorothene, Dow inhibited 1,1,1-trichloroethane, is now available from The Dow Chemical Co.

The 16-page, two-color booklet contains the most complete information yet released on this new and versatile cold-cleaning solvent which finds use in numerous industries.

Specified for use in dip, bucket, spray or wipe methods of cold cleaning, Chlorothene was introduced by Dow in 1954.

Distinct safety advantages make this solvent ideal for many uses. It is one of the safest solvents available from the standpoint of toxicity and also offers a low fire hazard since it has no fire or flash point.

(Please turn to page 60)

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Please have the manufacturer send me without obligation further information on the products described in the following numbers:

HL361_____; HL362_____; HL363_____; HL364_____;
HL365_____; HL366_____; HL367_____; HL368_____;
HL369_____; HL370_____.

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ELECTRONIC SECRETARY

TWO EASY WAYS TO INCREASE

DU KANE PAGING AND ALARM SYSTEMS

LEICH

A MEMBER OF THE GENERAL TELEPHONE SYSTEM — ONE OF AMERICA'S GREAT COMMUNICATIONS SYSTEMS

Offer your subscribers Electronic Secretary service. This marvelous machine gives them efficient, automatic telephone answering and message recording service 24 hours a day.

It answers subscribers' telephone calls while they are away, and gives a uniform recorded announcement to their customers, clients, and friends. It saves them time and money.

Here's an example of what Electronic Secretary does for you, the average telephone company. If you invest $415 in an Electronic Secretary DCR-1 Answering and Recording Unit, you receive $150 rent a year from the subscriber. This means you receive a 36% return on your investment the first year. You earn another $15.00 as an installation fee. The Electronic Secretary can be installed in 5 minutes —can be located anywhere.

Every business is a potential user of the Electronic Secretary. Service companies, churches, homes, doctors, lawyers, brokers, and theatres are a few. Several models are available. Write Leich for more details.

E REVENUE FOR YOUR TELEPHONE COMPANY

Many telephone companies are earning substantial monthly revenue from DuKane Paging and Alarm Systems.

These systems provide electronic audio equipment for transmitting vocal messages or signals throughout a building. They are also available for making announcements, or broadcasting music.

Switchboard attendants, like those pictured here, can operate a DuKane System easily. The paging microphone is conveniently located on top of the switchboard.

Many business firms have found DuKane Paging and Alarm Systems much more flexible and efficient than a code call on a PABX. The DuKane Systems leave the telephone switching equipment free for other duties. Then, too, the DuKane unit can transmit essential information to many people, while a code call can only summon a person to a telephone.

Louden Machinery Co., Fairfield, Iowa, has a Leich PABX that is equipped with an optional paging circuit. This allows any inside telephone to dial a number which connects it with their DuKane unit.

Rates have been established for this DuKane service. Revenue figures from companies now furnishing DuKane Paging and Alarm Systems indicate they are a good investment for you. You can earn over ⅓ of your original investment each year. Write Leich for more details.

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS

PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

manufacturers of telephones, switchboards and related apparatus since 1907

XUM

The new booklet also points out such advantages as high solvency, low corrosion, high stability and economy.

In cold cleaning operations Chlorothene can be recovered by distillation, a distinct economy factor. It is already being used by a widely diversified list of industries.

Among the many uses for this solvent is spray cleaning of electrical equipment. Request HL364.

•

STATIONARY DIESELS—Model 60 and Model 80 Superior stationary diesels are shown and described in Bulletin No. 110 recently issued by White Diesel Engine Division of The White Motor Co.

The literature lists the engines as designed to provide low-speed power for continuous, heavy-duty service. Engines are four-cycle, six or eight cylinder, inline models, ranging from 530 to 2000 BHP and from 300 to 1250 KW, are available either naturally aspirated or supercharged, and can be furnished to run as diesel, dual-fuel, or gas engines.

Both models have been successfully employed in telephone and general industrial service.

The 12-page, two-color bulletin includes product photographs, illustrated construction features, dimension data, performance curves, and specifications. Request HL365.

•

WIRE—A 72-page illustrated catalog describing the complete line of CF&I-Wickwire wire has been made available by The Colorado Fuel and Iron Corp.

The new catalog gives complete ordering specifications for all CF&I wire including manufacturers low carbon wire, high carbon fine and specialty wire, low carbon fine and specialty wire, and flat and shaped wire.

The catalog includes diagrams and descriptions of the various types and grades of wire, and also describes the manufacture of CF&I wire with special emphasis on the rigid testing and quality control of the product. Request HL366.

•

MOTOR TRUCKS—A 12-page, two-color illustrated booklet that recounts the 50-year history of International motor trucks has been produced by International Harvester Co., and now is being made available to truck owners and operators and to others interested in the automotive development of the United States.

Entitled "50 Years of International Trucks, 1907-1957," it traces the progress of truck manufacture from the first high-wheeled, 20-horsepower "IHC Auto Wagon" built in 1907 down to the present-day International operation.

The brochure also includes a chart showing the decade-by-decade increase of International production which has accounted for more than 2,600,000 trucks over the past half-century.

Another section compares specifications of the early auto wagon with those of a representative group of modern International models ranging from 4,200 to 96,000 pounds gross vehicle weight.

Statements by John L. McCaffrey, chairman of the board, and P. V. Moulder, president of International Harvester, point up the progress the company has made and future plans for the motor truck division. Request HL367.

•

POWER DERRICK — A four-page brochure has just been published by J. H. Holan Corp. to describe the operating features of its new Series 6800 Power Derrick.

The brochure has field photos in addition to features, dimensions and capacities for the derrick with or without extendible boom head. Request HL368.

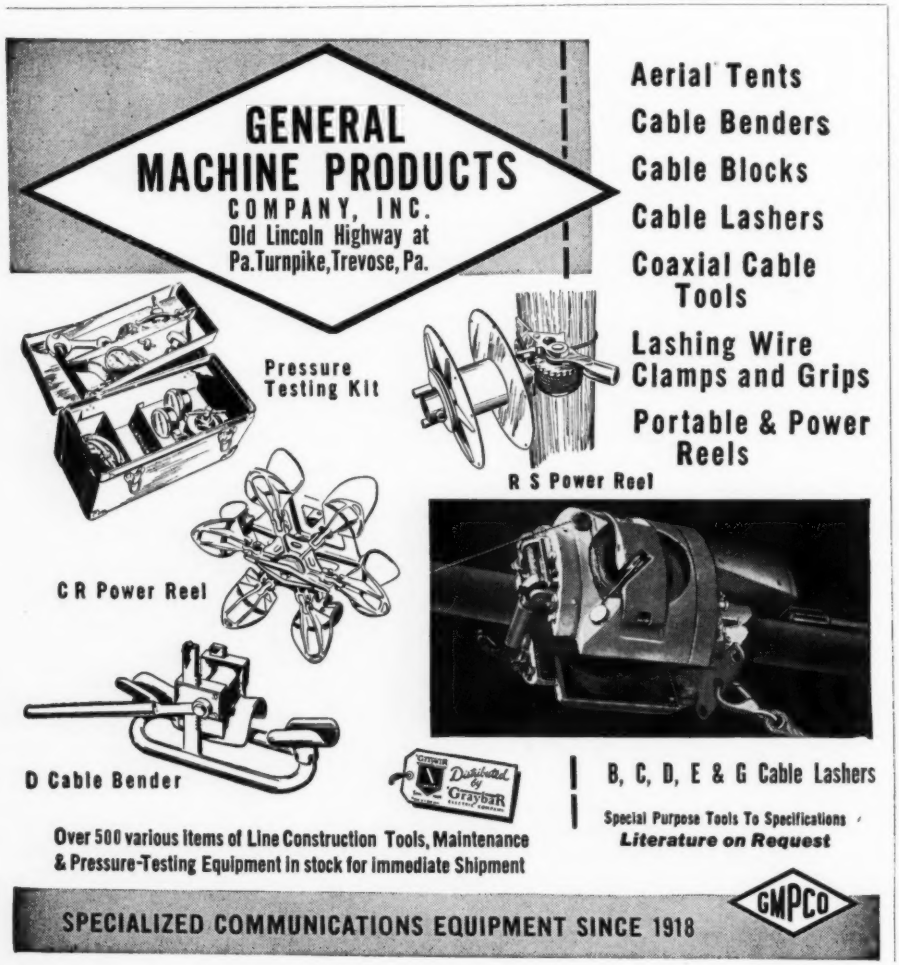
•

RECORD KEEPING SYSTEMS—The value of visibility in record keeping is the central theme of a new multi-colored 16-page brochure prepared by Diebold, Inc., to describe advantages of the firm's Tra-Dex Vertical Visible Record Systems. The brochure presents a simplified step-by-step analysis of the Diebold way to use visible margins more effectively for maintaining better business controls and reducing record keeping costs.

Graphic illustrations show how changing information — the key factor for controlling all activities involving money, things and people—is automatically exposed on the vertical margin of Tra-Dex records as a by product of each posting. In addition, Tra-Dex offers two additional visible margins — horizontal and diagonal—for separately exposing finding and signaling factors for fast glance finding.

The company lists operating advantages which stem from the exclusive Tra-Dex design that automatically expands the bottom of the working "V" 100 per cent each time a record section is opened as follows: It permits accurate "drop-filing" of records without disturbing adjacent accounts. Because records ride on rails and never touch

(Please turn to page 68)



ADVANTAGES OF DSA

Concluded from page 21

the job of rendering good telephone communication service with dial equipment. The telephone customer must know how to use this equipment properly. He should be aided when he cannot make connection to the desired number which the directory, or his personal knowledge, indicates to be a working number.

Proper assistance and instruction should better satisfy subscribers with their dial telephone service, and reduce false equipment usage and trouble complaints. Also repair and information service expense, and central office maintenance costs, should be reduced by good assistance service. Provision of dial assistance service should be considered as a means to reduce over-all costs rather than as an item of expense.

THE OPERATOR'S CORNER

Concluded from page 22

a request for an operator in her office by number or for an operator handling a specified call, how should she proceed?

(2) What is "Mobile Service?"

(3) How is communication established on a Mobile Service Call?

(4) What is the standard abbreviation for Mobile Service?

(5) Which calls are considered as local Mobile Service calls?

Answers are presented on page 62.

TROUBLE CLEARING

Continued from page 32

of line relays are provided for two purposes: (1) Lines which, for any reason, exceed the resistance limit for a line without a relay, and (2) for use on all outside stations regardless of resistance.

Line relays should be used for all lines that extend outside of the building in which the switchboard is located. A possible exception is where stations are located in an adjacent building and the two buildings are connected by a short run of *unexposed* cable.

Neglect of this rule may play havoc with the night alarm. This trouble may also occur on inside stations, but if so, it is a definite case of trouble.

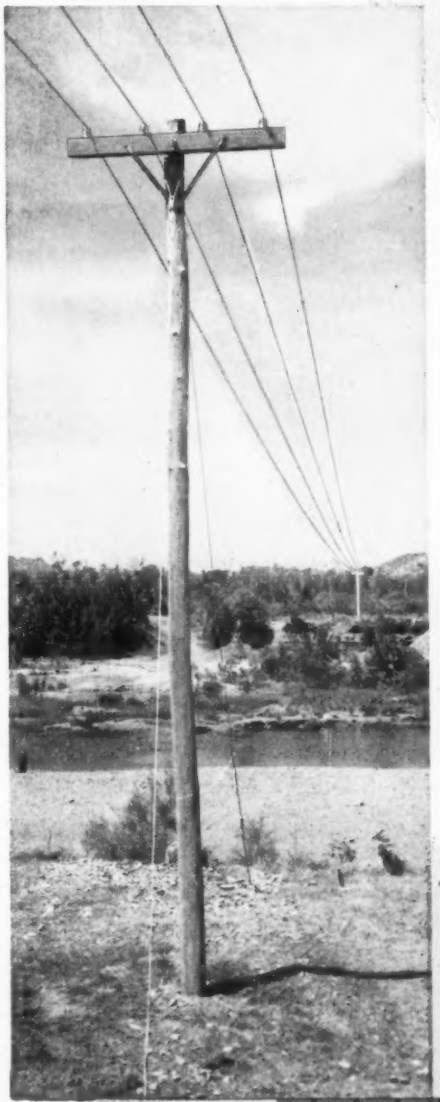
The following case is an example:

The local force reported that they could not keep the night alarm relay adjusted at a certain hotel PBX and the writer was assigned to the case.

Crapo HTL-195

FOR EXTRA LONG SPAN RURAL LINES

The *NEW* *LOWER* Resistance Extra-High Tensile Line Wire



- **Better Voice Transmission**
- **Spans to 600 Feet or More**
- **Savings in Material and Labor**
- **Lower Ultimate Costs**

Superior voice transmission qualities and extra high physical strength are combined in **Crapo** HTL-195 to provide the most practical and economical of conductors for rural telephone circuits.

This new, lower-resistance steel line wire, with a minimum breaking strength of 1800 pounds, makes possible spans to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading areas. Where terrain and other conditions permit the use of extra long spans, this means a 40% reduction in pole structures. The savings in materials and in construction costs will be apparent.

Before building new, or replacing old rural lines, investigate the possibilities of **Crapo** HTL-195! Write for complete information, including Manual of Engineering Data, No. A-195!

Pioneers in the development of high tensile and extra-high tensile steel line wire, and associated products, for the telephone industry.

INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

XUM

There were no outside stations and no line relays.

A heavy leakage current was evidently flowing through the night alarm relay. A voltmeter test on the lines showed that nearly every line had a small leak. However, none of these leaks were heavy enough to cause a permanent, or even supervision trouble.

Nevertheless, the combined leakage was too much for the night alarm relay. Our first thought was that the house cable might be slightly damp, but further tests determined that it was not "wet" trouble. We then examined the telephone sets.

They were all very old. They were in fact quite obsolete. They had a condenser mounted in the recessed back of the wall set which measured about 5 x 7 inches. This type had not been manufactured for many years. All of these condensers ("capacitors"—to be up to date) showed a slight leak. A wholesale replacement of the instruments with modern sets solved that night alarm problem.

In our next article we will return to a subject that will apply to all types of exchanges from the oldest magneto to the latest dial office.

Gov. Joseph B. Johnson of Vermont proclaims Sept. 8-14 Independent Telephone Week. Left: Hollister J. Fletcher of Wallingford, president of the Telephone Association of Vermont. Right: Gardner Hopwood of Marshfield, association director.

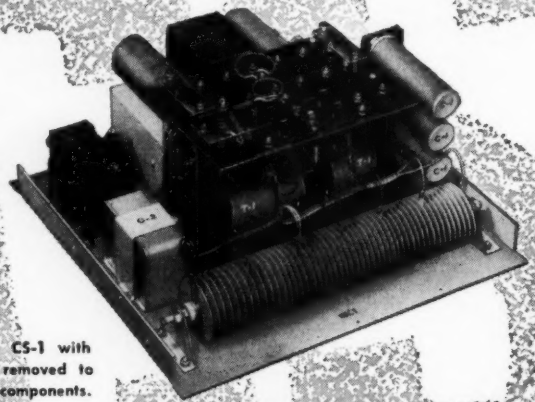
Book Review

"ENGINEERING PROPERTIES AND APPLICATIONS OF PLASTICS," by Gilbert Ford Kinney. 278 pages. $6.75.

Written for those who work with plastics and require background information for the proper utilization or specification of these materials, "Engineering Properties and Applications of Plastics" was published in August and is the work of Gilbert Ford Kinney, who emphasizes an understanding of the fundamental nature of plastics and analyzes why they behave as they do.

Dr. Kinney devotes separate descriptions to the various plastics. His unified treatment, rather than a topical approach, permits the principles, concepts, and terminology to be established in the simpler cases. This method is also utilized in dealing with the

FLOTROL Carrier Supply units



Model CS-1 with cover removed to show components.

FLOTROL CARRIER SUPPLY UNITS are designed to supply regulated 130 volt plate current for carrier or repeater operation. The units normally operate from 115 volt 60 cycle single phase power supply, and will automatically transfer to a built-in standby vibrator which operates from the exchange battery upon power interruptions, maintaining uninterrupted plate current during power failures. Regulated voltage is maintained during both normal and standby operation. CS units are housed in attractive light gray steel cabinets, and can be mounted on the wall or in a 19-inch relay rack.

LORAIN Products Corporation

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POWER EQUIPMENT FOR COMMUNICATIONS AND INDUSTRY

FLOTROL PARTNERS IN DEPENDABILITY SUB-CYCLE

Answers to Questions On Page 22

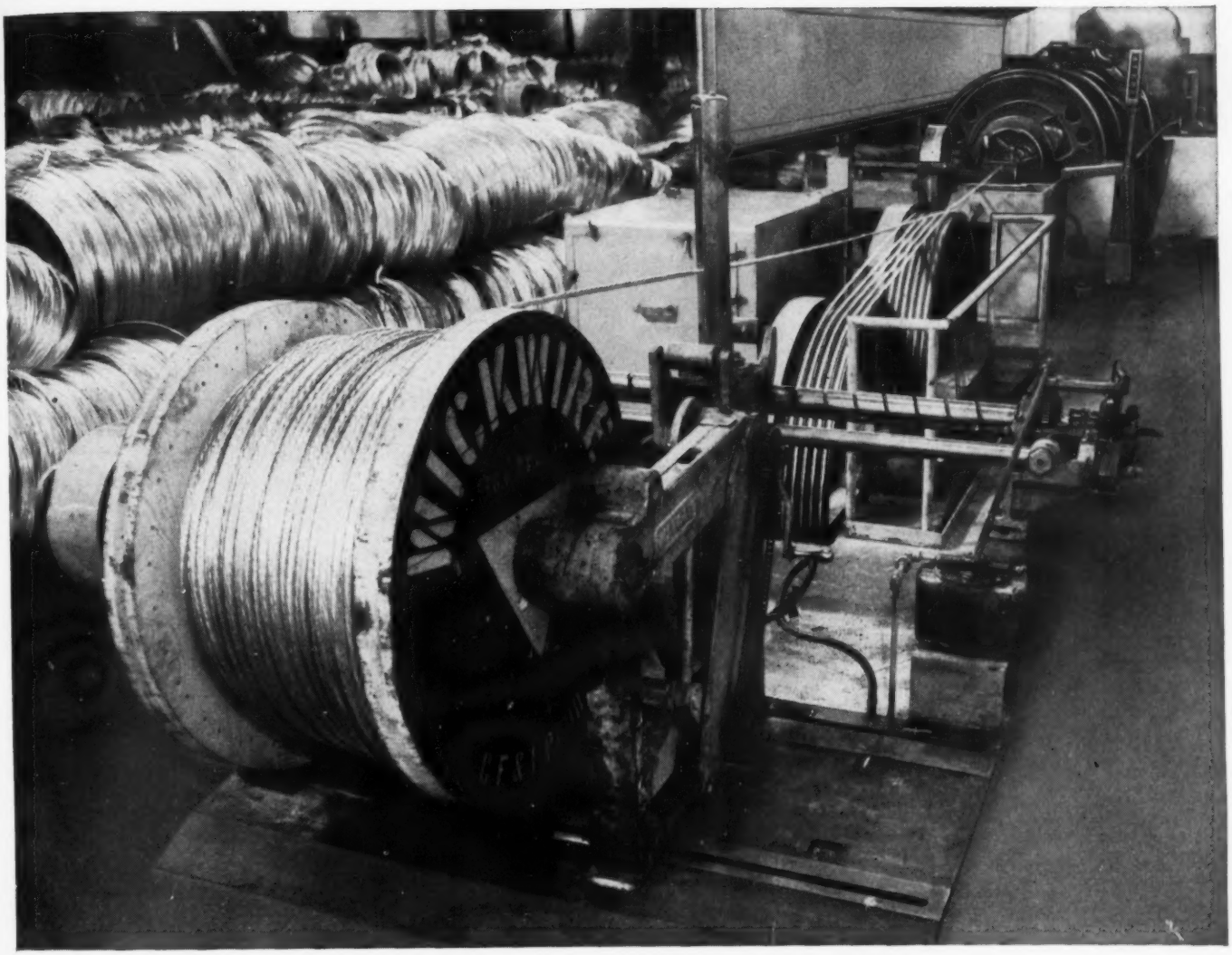
(1) If a customer asks for a long distance operator by number without specifying a distant place, or asks to have a previous call tried and mentions an operator by number, state that you are operator (no.) and obtain the necessary details to complete the request.

(2) Mobile Service provides a means of telephone communication between transportation units equipped for this service, such as trucks, buses, private cars, boats, trains, etc.

(3) Communication is established through a radio-telephone base station and each office operating such a station is known as a Mobile Service office.

(4) The standard abbreviation is "MS".

(5) Mobile service to or from wire telephones within a locally specified area of an MS office is considered local mobile service and charged for in terms of MS service units.



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quality
service
dependability

CF&I Galvanized Steel Strand assures quality, service and dependability. This strand is manufactured to ASTM Specifications A-122, A-363 or to your own specification in seven- and three-wire constructions. Next time you need steel strand for ground, messenger or guy wire applications, contact the nearest CF&I sales office for complete details.

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THE COLORADO FUEL AND IRON CORPORATION

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Connollys Ltd., the most honored international brand name in cable manufacture, now offers Connollys' cables to U.S.A. purchasers for domestic and overseas installations. Connollys' Blackley works in Manchester, England, combines modern Atomic Age methods with the loftiest British tradition to produce cable to the most exacting specifications. Connollys installations encircle the world . . . have been standard with the British Post Office and other world wide telephone administrations for half a century.

TELECOMMUNICATION CABLES
Thermoplastic

Polythene Insulated and Polythene sheathed (Armored if necessary).
Polythene Insulated and P.V.C. Sheathed (Armored if necessary).
P.V.C. Insulated and P.V.C. Sheathed Telephone Cables (Armored if necessary).
P.V.C. Insulated, Silk Covered and Lacquered P.V.C. Sheathed Switchboard Cables.
P.V.C. Insulated, Silk Covered and Lacquered and Cotton Braided, Flameproofed Switchboard Cables.
P.V.C. Insulated and Cotton Braided Wires.
P.V.C. Insulation with Nylon Sheath.

TELECOMMUNICATION CABLES
Lead Covered

Air Spaced Dry Core, Paper Insulated, Twin, Unit or Quad Construction, 1 pair to 1,800 pairs.
Enamel, Silk and Wool, Quad, 8 pairs to 202 pairs.
Enamel, Silk and Wool, Twin, 7 pairs to 200 pairs.
Enamel, Silk and Cotton.
Enamel, Cotton, Twin, Internal Wiring, 1 pair to 100 pairs.

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Polystyrene.
The acrylic plastics.
Other vinyl-type plastics.
The cellulose plastics.
Phenolic plastics.
The amino plastics.
Polyesters, polyamides, and epoxies.
Silicones, and the rubbers.

Separate chapters describe methods for fabrication, as well as the mechanical, electrical, optical, and thermal properties of these materials. The author also provides an abbreviated survey of the type reactions of organic chemistry. In effect, he establishes the broad background necessary to effect good design.

Dr. Kinney is professor of chemical engineering at the U. S. Naval Postgraduate School in Monterey, California. Together with Paul J. Kiefer and Milton C. Stuart, he wrote "Principles of Engineering Thermodynamics" which appeared in a second edition in 1954.

This book may be purchased through TELEPHONY.

Lincoln T&T Makes Three Managerial Appointments

Managerial appointments effective Sept. 1 were announced on Aug. 29 by The Lincoln (Neb.) Telephone & Telegraph Co.

Joseph D. Adamson, formerly area manager at Tecumseh, Neb., becomes area manager at Geneva, succeeding

J. D. ADAMSON

Charles J. Crew who retires after 39 years with the company. W. H. Husing succeeds Mr. Adamson as area manager at Tecumseh, and Charles H. Kermoade becomes exchange manager at Wilber.

Mr. Adamson has been with the company since 1946. He was an installer and repairman at Nelson, Superior and Edgar before becoming manager at

W. H. HUSING

Edgar in 1951. He moved to Hastings later that year as district clerk and was advanced to area manager at Tecumseh in 1955.

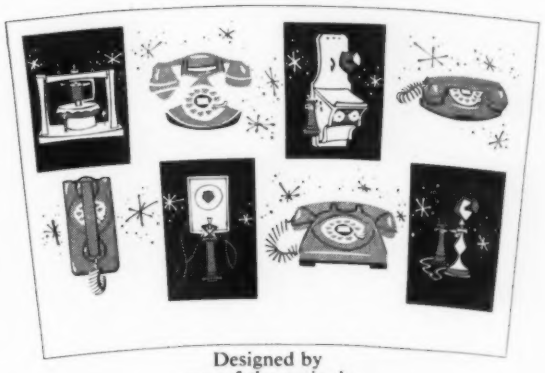
Mr. Husing joined the company as an installer and repairman at Seward in 1942 and was transferred to Weeping Water in 1943. In 1945 he entered military service and served one year

C. H. KERMOADE

with the Army Signal Corps as an instructor in central office equipment maintenance. He returned to the company in 1946 as an installer and repairman at Tecumseh and was appointed exchange manager at Sterling in 1949 and exchange manager at Wilber in 1956.

Mr. Kermoade joined the company in 1942 as a groundman at Auburn. During World War II he served for three years in the Navy with the Pacific fleet, returning to the company at Auburn in 1946. He became a lineman in the general construction department in 1947 and later that year was transferred to Syracuse as an installer and

Telephone Tumblers



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Crystal clear, heavy glass in stylized design and 3 colors: Red, Black and Gold. Each glass depicts the development of the telephone. Set of 8 Generous 12-Ounce-Size TELEPHONE TUMBLERS shipped in heavy corrugation to insure safe delivery. A handsome choice for the discriminating.

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... electricians

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In Klein-Kord, too, Klein offers to industry the first specially woven fabric for safety straps—a fabric designed to permit the use of a tongue-type buckle without the risk of slitting or ripping under severe strain.

Now in Nylon Klein-Kord safety straps Klein still leads with the newest in safety equipment specially designed for use by utilities wherever power or communication lines are strung.

Write for Free Tool Guide
A free copy of the new Klein Pocket Tool Guide will be sent to anyone interested on request.

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Foreign distributor:
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repairman. He moved to Seward in 1949 as an installer and repairman and was appointed exchange manager at Milford in 1952. He became exchange manager at Western in 1953.

Mr. Crew rounds out a career of 39 years with the company. For the past 23 years he has made his home at Geneva serving as the company's area manager. Before moving there in February 1934, he worked at Weeping Water as an installer and repairman in 1918, later serving at Brainard and Dwight as manager and wire chief. He was manager at Polk from 1924 to 1934. He is a member of the Frank H. Woods chapter of the Independent Telephone Pioneer Association.

Stromberg-Carlson Names Brennan to Engineering Post

Richard W. Brennan has been appointed telecommunication service engineer for Stromberg-Carlson, a division of General Dynamics Corp., according to an announcement by David Balis, manager of installation and service in the company's telecommunication division.

R. W. BRENNAN

In his new capacity Mr. Brennan will make his headquarters in Rochester, and will serve customers in New England, New York, New Jersey, Maryland, Pennsylvania, West Virginia and parts of Ohio.

Mr. Brennan brings to his new position many years of practical experience in telephony. He joined Stromberg-Carlson in 1942 as a member of the shipping department, and shortly thereafter left for a three-year tour of duty as a mechanic with the U. S. Air Force, serving in this country and the Pacific. Upon his return to Stromberg-Carlson he worked in the switchboard department, and two years later transferred to the installation and service department, first as an installer, and later as installer foreman.

In 1955 Mr. Brennan was advanced to telephone systems engineer, and he continued in that capacity until his present appointment.

Mr. Brennan was born in Guelph, Ontario, Canada.

Kellogg Names R. M. Pirnie Regional Manager

Robert M. Pirnie has been appointed south central regional manager of Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., according to an announcement by O. C. Bailey, general sales manager.

R. M. PIRNIE

Mr. Pirnie has owned and operated the Union Springs (Ala.) Telephone Co., since 1955, prior to which he was associated with Kellogg. He started as a field representative in Kellogg's Kansas and Missouri territories and was manager of the Florida-Alabama-Georgia district at the time he acquired the telephone company.

After graduation from Sacramento (Cal.) Junior College, Mr. Pirnie served with the U. S. Air Force for four years both in the United States and throughout the European Theater. While stationed at Muroc Dry Lake, Cal., he did experimental rocket work with the California Institute of Technology.

Later he served as commanding officer of Sub-Depot Aircraft Maintenance, Repair and Base Communications. Following his discharge in 1946, he spent a year as a pilot for TWA before first joining Kellogg in 1947.

Mr. Pirnie, a native of Kansas City, Mo., will headquarter there in his new post and will direct the over-all

operations of Kellogg's western and southwestern divisions which extend from Nebraska, Colorado, New Mexico and Texas east to the Mississippi River.

Stromberg Names Gleason to Electronics Division Post

Howard S. Gleason, formerly manager of marketing of the electronics division of Stromberg-Carlson, has been appointed assistant general manager of the division, according to an announcement by George A. Peck, vice president

H. S. GLEASON

and general manager. Stromberg-Carlson is a division of General Dynamics Corp.

Mr. Gleason, a mechanical engineering graduate of the Massachusetts Institute of Technology, joined Stromberg-Carlson's research department in 1946. Later he became assistant manager of production engineering in the company's then radio & television division, and in 1955 was assigned the task of organizing and directing the new automation research department. Earlier this year he was named manager of marketing in the division.

Mr. Gleason holds five patents in the field of electronic devices, and has several more applications pending.

Prior to joining Stromberg-Carlson he served three years with the U. S. Marine Corps in this country and the Far East.

Return to Tranquility

"The time has come, it seems to me, when our people wish to insure that domestic tranquility which our Constitution sought for us in the beginning of the Republic. Disturbers of the peace, political or economic, must be prepared to face the consequence of offense to the common will."—CRAWFORD H. GREENEWALT, *president, E. I. du Pont de Nemours & Co.*

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Here's Safer, Easier Reel Handling

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Write for full data on Reel Jack No. A-1029 and other Simplex Utility Jacks.

Pole Pulling and Straightening Jacks—Save time, cut work crews necessary to pull, straighten or move poles. No. A-1538 has aluminum housing, 15-tons capacity, weighs 63 lbs.

All-Purpose Jack — No. 310A lifts, pulls, pushes at any angle. Four lift points. 15-tons capacity.

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HELPFUL LITERATURE

Concluded from page 60

bottom of tray, the feed-edge is always kept in perfect order for proper alignment in posting machines. It permits widest possible choice of light and heavy paper stocks. It prevents Tra-Dex records from "working-up" in file.

Almost unlimited choices of record sizes and colors are available. Main, sub and break-down guides are completely independent of equalizer-separators. Section and Manifold Units are selected to fit job specifications.

Mobile trays and cabinets expedite both hand and machine posting operations and facilitate fast reference to large as well as small volumes of records. Request HL369.

•

PLASTIC PRODUCTS—Gladwin Plastics, Inc. recently issued a catalog of its plastic products and services designed for use by telephone companies.

Included are small unlighted plastic telephone signs, lighted signs, paystation signs, roadside signs, illuminated booth roof-tops, carrying cases for nine miniature telephone handsets, Tel-Pen set (made from miniature handset), coin boxes and bookholders. Request HL370.

A Stamp to Honor the Telephone Industry?

By Harold J. Ashe

AMOUNTING NUMBER of professions, trades, industries and economic groups are being honored by issuance of a commemorative postage stamp by the United States Post Office Department. A commemorative stamp paying tribute to the entire telephone industry is long overdue.

Telephone company owners and executives may feel that issuance of such a commemorative postage stamp is a remote prospect, even consider asking for it as presumptuous. Such an attitude fails to take note of the current trend in United States commemorative stamps.

The first commemorative postage stamps were issued by the Post Office Department in 1893. Known as the Columbian issue, these stamps were issued in recognition of the 400th anniversary of the discovery of America by Columbus, coincident with the Chicago World Fair in that year.

During the next 50 years, several hundred commemorative postage stamps were issued. During this period (1893-1943) commemorative stamps were used exclusively to honor famous persons, historical events, public shrines and monuments, parks and similar subjects. Starting in 1944 commemorative stamps began appearing which recognized the importance of industries, professions, groups and even associations. In that year four stamps were issued honoring the following industries: railroad, steamship, telegraph and motion pictures.

Since that year special stamps have been printed honoring youth, doctors, poultry industry, volunteer firemen, American Bankers Association, Boy Scouts, American Chemical Society, 4H Clubs, American Automobile Association, Baltimore & Ohio Railroad, newspaper boys, civil engineers, American Bar Association, the trucking industry, American Institute of Architects, the steel industry and many others.

Therefore, a stamp honoring the telephone industry is both in order and good taste. In all modesty the American telephone industry has as much claim to recognition on a commemorative postage stamp as bankers, poultry raisers, steel makers, lawyers, news boys or commercial haulers.

However, this recognition of the telephone industry and its importance in the American economy won't be given unless it is sought. This is one noncontroversial project on which all branches of the industry can unite. Both employers and employes can work

IF YOU WANT PROOF IN ADVANCE

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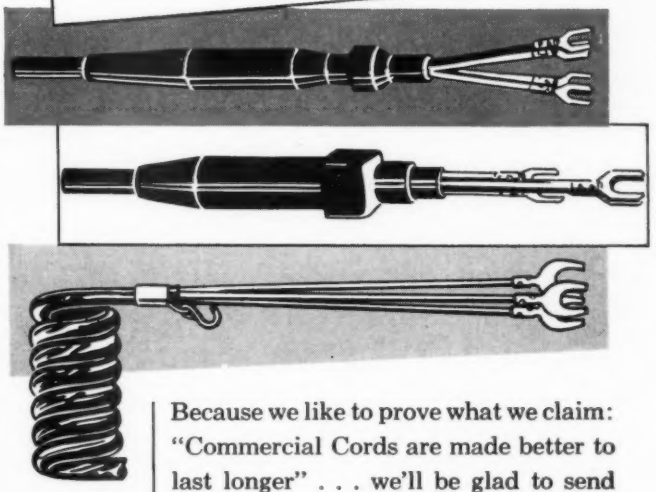
COMMERCIAL TELEPHONE CORDS



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- **Instrument** • **Operator's**
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in NYLON . . . NEOPRENE . . . MERCERIZED COTTON

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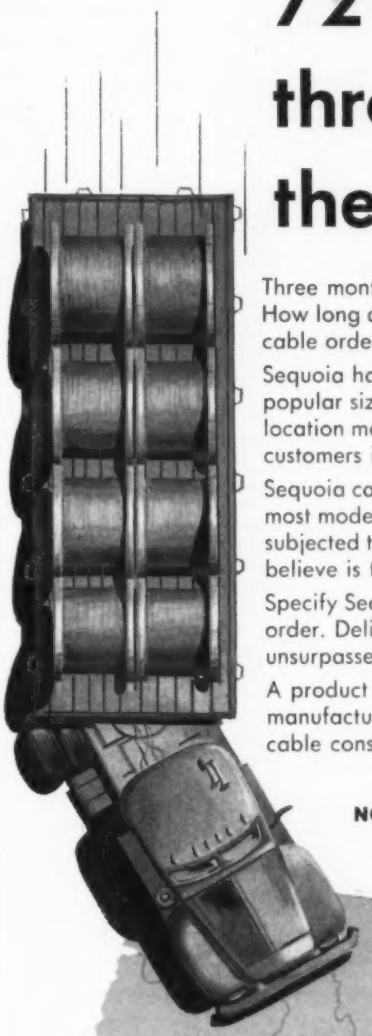
QUALITY CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

Cable in 72 hours * throughout the West!



Three months? Six months? How long did you wait for your last cable order?

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for such a commemorative postage stamp if they are so minded.

The nearest approach to recognizing the industry on a postage stamp was in 1940. In that year, seven sets of postage stamps were issued honoring famous Americans. In the famous inventors group, Alexander Graham Bell's portrait appeared on the 10-cent issue. No reference to the telephone appeared on the stamp.

While probably most commemorative postage stamps mark the 100th anniversary of an event or occasion, others mark fractions of 100 years, such as 50, 75 or 125 years. It is important that a significant event in telephone industry history be selected as the occasion to commemorate. It should be borne in mind it may take several years of pushing for such a stamp before it is authorized.

What should be done? Get state and national associations to pass resolutions asking for issuance of such a commemorative stamp, marking a particular event in the industry's history. Unionized employes should enlist the aid of their locals in pushing the project. Resolutions should be backstopped by cogent reasons why the honor is deserved and is overdue. Letters and resolutions should go to the Postmaster General, Washington, D. C.

In addition, individual members of the industry should write letters to their Congressmen enlisting their support.

It is possible that a coordinating committee might be set up to concentrate solely on such a project and to enlist the widest possible support not only from associations, telephone companies, unions and their representatives, but also suppliers and manufacturers serving the industry.

Two Ohio Telephone Men Aid Plane Crash Victim

Steubenville, O., Cable Splicer Frank Fleder and his helper, Ernest Blake, were working at the end of the Pier Airport runway at Wintersville, O., when they saw a small private airplane take off. Just after the plane got into the air, the motor began to miss.

The pilot banked and attempted to return to the field for an emergency landing when the motor failed completely. The plane first hit a power line —6,900 volts—breaking it down, then the wing hit a tree, swung around and cracked up on the landing field about 150 yards from where the employes were working.

Fleder and Blake rushed from their job, grabbed their first aid kit and ran to the plant. The pilot was still sitting in the plane, apparently dazed, and bleeding from his face.

Blake immediately broke the window of the plane, opened the door and shut off the ignition switch. He had enough knowledge of airplanes to recognize the danger that was caused by the ignition switch being still on and the fuel pump in operation. This action, which he took, may have prevented a fire and explosion.

Both men helped the pilot out of the plane. Fleder rushed to a nearby home and called an ambulance, then returned and helped administer first aid.

Fleder and Blake then stood guard over the 6,900-volt line, which was jumping on the ground near the plane, to prevent anyone from coming in contact with it until the power company arrived to make the necessary repairs.

The pilot, saved from a possible explosion and helped by the prompt first aid given him by Fleder and Blake, was treated for shock and face lacerations at the hospital and released.

Fleder and Blake were credited with not only helping the victim, but also averting further tragedy by preventing a plane explosion and injury to others by the broken power line.

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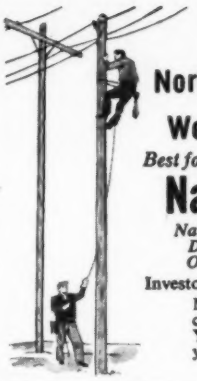

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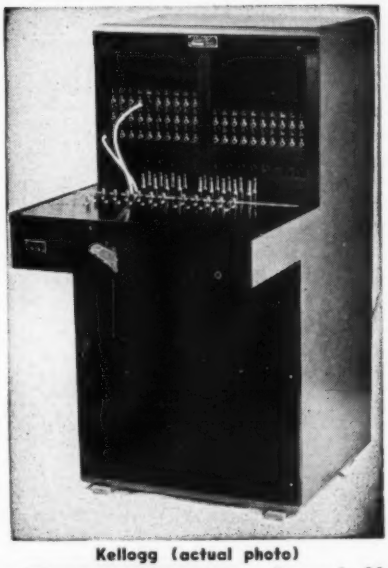

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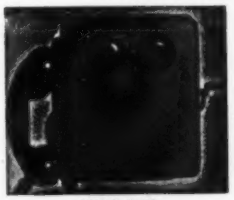

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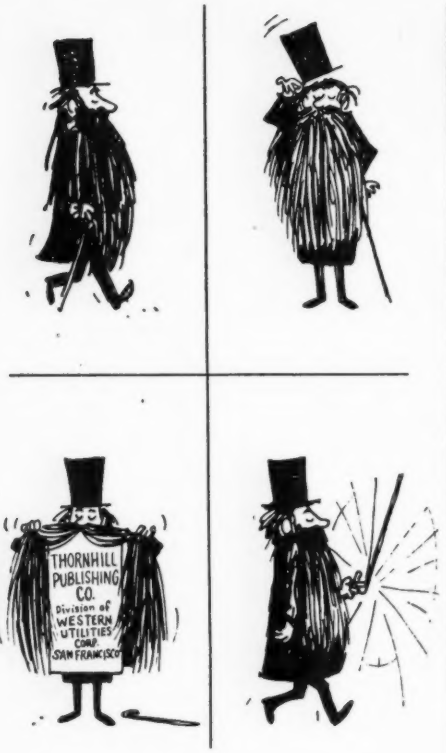

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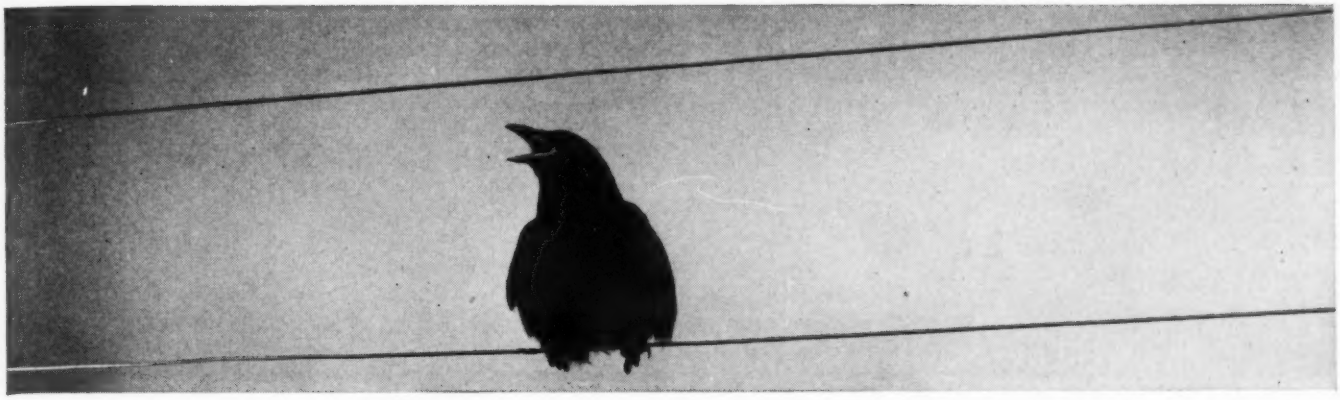

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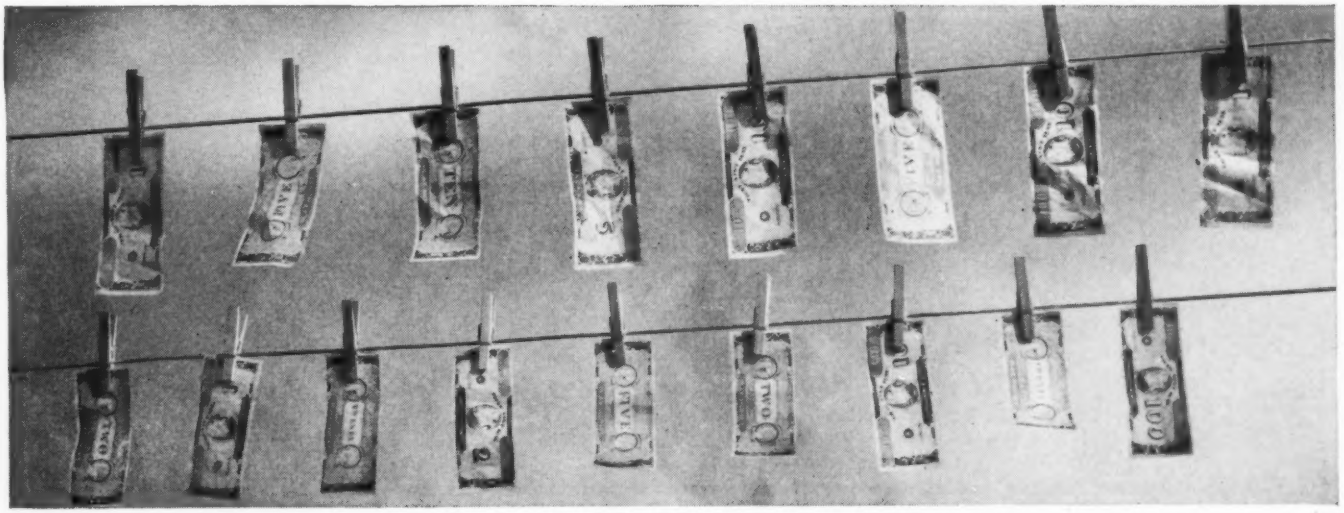
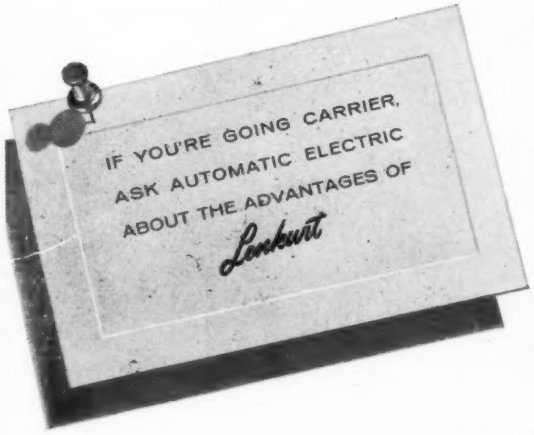


with LENKURT carrier



Before you go to all the expense of laying cable or planting poles to add new toll circuits, we suggest you get the Lenkurt story from an Automatic Electric engineer. Because with Lenkurt Carrier you can add dozens of profitable new toll circuits, probably without stringing wire or disturbing a square inch of real estate.

OTHER LENKURT ADVANTAGES: You get your toll circuits into money-making operation much faster. Initial cost is less, in most instances. You're ready to expand—quickly and at low cost—anytime in the future.

As the distributor of Lenkurt equipment, Automatic Electric offers "carrier without complications"—engineered, furnished and installed.

Whether you're thinking about expanding right now or at some future date, one of our carrier engineers can give you the whole story. Why not drop us a line right now? Automatic Electric Sales Corporation, Northlake, Illinois. *In Canada:* Automatic Electric Sales (Canada) Ltd., Toronto, Ontario. *Offices in principal cities.*

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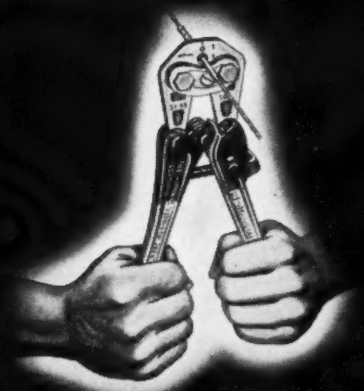
1 CLEAN ENDS OF WIRE

2 INSERT WIRE IN SLEEVE

3 COMPRESS WITH THE EASY TO HANDLE *Nicopress* TOOL



Ask Your Jobber

and you get this

The completed splice is stronger than the rated breaking strength of the wire itself.

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